The RHODE ISLAND MEDICAL JOURNAL

VOL. XLIII JANUARY, 1960 NO. 1

PRESENT TRENDS IN THE TREATMENT OF THE CEREBRAL VASCULAR DISEASES*

C. MILLER FISHER, M.D.

The Author. *C. Miller Fisher, M.D., of Boston, Massachusetts. Assistant Clinical Professor of Neurology, Harvard Medical School; Neurologist, Massachusetts General Hospital.*

THE LAST fifteen years have witnessed a remarkable resurgence of interest in the clinical and pathological features of cerebral vascular disease. In the wake of this, some progress in treatment has been achieved and the short- and long-term goals of therapy have been delineated with greater clarity and precision than heretofore. A résumé of these therapeutic claims and aims is the subject of the present paper.

In order to understand better the field of disease under consideration we might briefly review a recently formulated classification of the cerebral vascular disorders[1] (Table 1). All of these disorders express themselves in one of two ways, either infarction or hemorrhage. It is as simple as that. To these one may add reversible ischemia as in transient cerebral ischemic attacks, fainting or the aura of migraine, conditions that usually leave no permanent damage to nerve tissue. The four conditions of greatest importance because of their high incidence are cerebral thrombosis with atherosclerosis, cerebral embolism, cerebral hemorrhage, and ruptured saccular aneurysm. My remarks will refer primarily to these four.

Before discussing "The Big Four" attention might be drawn to a few rather striking therapeutic successes in some of the less common cerebral vascular diseases. Meningovascular syphilis causing either multiple small infarcts in the cerebrum or devastating infarction of the spinal cord has become a great rarity since the advent of penicillin therapy, and, at present, on the wards of the Massachusetts General Hospital we may encounter no more than one case each year. Acute hypertensive encephalopathy, characterized by acute malignant elevation of the blood pressure, headache, nausea, vomiting, seizures, stupor, coma, and death is now an uncommon event thanks to the efficacy of the various hypotensive agents, especially the Methonium compounds, Reserpine, and Chlorothiazide. Septic embolism in acute and subacute bacterial endocarditis, especially in the latter, has become an uncommon occurrence since the introduction of effective antibiotic agents. Likewise, cerebral thrombophlebitis secondary to suppuration of the paranasal and mastoid sinuses has been reduced to a small fraction of its former incidence. A slight claim to therapeutic benefit might be made for the use of Cortisone in temporal arteritis, the incidence of blindness apparently being reduced if the drug is used early.

I. *Cerebral thrombosis with atherosclerosis*—Accounting for some 50 per cent of all cerebral vascular lesions at autopsy, cerebral thrombosis with atherosclerosis is a major cause of death, disability, and "loss of human dignity." The carotid and basilar systems are affected with approximately equal frequency and almost any vessel large or small may be involved. Thrombus appears to be deposited or superimposed on atherosclerotic plaques. In 90 per cent of cases the stroke develops not as a single blow but either in an intermittent step-wise fashion with increments of deficit added from hour to hour, day to day, or week to week, or the stroke is preceded by one or more prodromal fleeting attacks of ischemia, veritable strokes-in-miniature, which act as a warning that disaster lurks.

When the thrombotic stroke evolves over a period of time, rather than exploding abruptly, an opportunity is provided to prevent the development of full-blown paralysis by applying treatment early in the clinical course. This is a most important, actually, a fundamental consideration in the approach to cerebral vascular disease for, once full infarction has occurred, no known measure so far devised seems to influence the degree of recovery one wit, viz. stellate block, nicotinic acid, carbon dioxide inhalation, histamine, etc. In cerebral thrombosis *prevention* is the keynote. Ultimately the basic problems of atherosclerosis and hypertension will be solved and cerebral thrombosis will be erased, but until that day arrives, we shall have to resort to

continued on next page

*From the Neurology Service, Massachusetts General Hospital, and the Department of Neuropathology-Neurology, Harvard Medical School. Presented at the Neuropsychiatric Staff Rounds, Rhode Island Hospital, May 16, 1959.

stop-gap methods of management such as anticoagulant and surgical therapy.

A. *Anticoagulants* — First advocated in cerebral thrombosis as the result of preliminary trials in 1951 and 1952,[2] anticoagulants are now widely used as a *preventive,* I repeat *preventive* measure. They find a place mainly in two conditions: (1) thrombosis-in-evolution, i.e., where fragments of the stroke are developing seriatim; and (2) transient ischemic attacks which are almost always a manifestation of cerebral thrombosis. Millikan[3] and his co-workers in a large series of cases of both carotid and basilar disease confirmed the earlier impression of the efficacy of anticoagulants, finding that transient ischemic attacks were abolished in almost all instances and the mortality apparently reduced. However, data on control cases were not collected, a necessity in an illness with such a variable spontaneous course. Recently we[4] have had occasion to study a group of 47 patients who were randomized into two groups, one anticoagulated, the other not anticoagulated. All patients were either in the process of developing a stroke or had been having repeated attacks of transient ischemia. Long-term anticoagulation was carried out and at the end of one year the results were as shown in Table 2. The measures of response included death, progression of a neurologic deficit already present, occurrence of a new neurologic deficit, recurrence of ischemic attacks and the occurrence of thromboembolic episodes elsewhere in the body (myocardial infarction, venous thrombosis, pulmonary embolism, etc.). In comparing the control group, numbering 113 patient-intervals with the treated group comprising 63 patient-intervals, (i.e., roughly one-half the former) we find nine deaths in the control, four deaths in the treated — not a significant difference; in the control group there were 17 cases in which the neurologic picture clearly worsened, in the treated, only 4 and this is probably a significant difference; transient ischemic attacks numbered 12, plus another questionable 8 in the control, and only 3 in the treated. Six extracerebral thromboembolic episodes occurred in the control, compared with one in the treated; in the anticoagulated group there were 5 hemorrhagic complications, at least one of which was fatal, a strong reminder that the use of anticoagulants is not entirely safe. From this scientifically designed therapeutic trial, the conclusion seems warranted that long-term anticoagulation is of benefit in halting the advance of cerebral thrombosis and in preventing transient ischemic attacks. Insofar as early diagnosis is a prerequisite for successful therapy, a heavy responsibility is placed upon the physician faced with establishing the exact nature of the patient's neurologic symptoms and signs in the earliest stage. Cerebral hemorrhage must be excluded and usually can be if the cerebrospinal fluid is found to be free of blood. Transient ischemic attacks must be differentiated from cerebral seizures, Menière's disease, Stokes-Adams attacks, migrainous aura,

continued on page 30

TABLE 2

Comparative data in the control (C) and treated (T) cases of cerebral thrombosis at the end of one year. The number of events is tabulated separately for each month from the first to the fourth while the period from the fifth to the twelfth month is counted as one interval because of the small number of events taking place. The number of patients who remained on the prescribed therapy and completed each successive month of therapy is shown in the first vertical column. The difference from month to month represents patients who died, changed therapy or were lost to the study.

		No.	Deaths	Recurrence or Worsening	Transient Ischemic Attacks	Non-Cerebral Thrombo-Embolism	Bleeding Episodes
1st Month	C	29	2	8	3	4	0
	T	18	0	2	3	0	2
2nd Month	C	23	2	1	1+?1	0	0
	T	14	1	0	0	0	0
3rd Month	C	21	0	2	2+?1	0	0
	T	12	1	1	0	1	1
4th Month	C	21	1	1	1+?1	1	0
	T	10	0	0	0	0	0
5th-12th Month	C	19	4	5	5+?5	1	0
	T	9	2	1	0	0	1
Totals	C	113	9	17	12+?8	6	0
	T	63	4	4	3	1	4

TABLE 1

Classification of Cerebrovascular Diseases adopted by *ad hoc* committee of National Institute of Neurology and Blindness (modified)

I. CEREBRAL INFARCTION [PALE, RED (HEMORRHAGIC) AND MIXED TYPES]

A. Thrombosis with Atherosclerosis

B. Embolism
1. Cardiac origin
a). Atrial fibrillation and other arrhythmias (with rheumatic, atherosclerotic, hypertensive, congenital heart disease)
b). Myocardial infarction with mural thrombus
c). Acute and subacute bacterial endocarditis
d). Heart disease without arrhythmia or mural thrombus, mitral stenosis, etc.
e). Complications of cardiac surgery
f). Nonbacterial thrombotic ("marantic") endocardial vegetations
g). Paradoxical embolism with congenital heart disease
2. Noncardiac origin
a). From sites of atherosclerosis in aorta and carotid arteries (mural thrombus, atheromatous material)
b). From sites of cerebral artery thrombosis (carotid, middle cerebral, basilar, vertebral)
c). Thrombus in pulmonary veins
d). Fat
e). Tumor
f). Air
g.) Complications of neck and thoracic surgery
h). Miscellaneous rare types
i). Of undetermined origin

C. Other Conditions Causing Cerebral Infarction
1. ruptured saccular aneurysm
2. cerebral venous thrombosis
3. systemic hypotension
4. complications of arteriography
5. arteritis (see V)
6. hematologic disorders (polycythemia, sickle-cell disease, thrombotic thrombopenia, etc.)
7. dissecting aortic aneurysm
8. trauma to carotid (including massage of sinus region)
9. compression of vertebral artery in neck-traction, osteopathic manipulation, etc.
10. persistent deficit with migrainous aura
11. with tentorial, foramen magnum, and subfalcial herniation
12. hypoxia
13. miscellaneous rare types: radioactive or X-ray radiation, lateral pressure of intracerebral hematoma on vessels passing nearby, unexplained middle cerebral infarction in closed head injury, pressure of unruptured saccular aneurysm on adjacent vessel, mural thrombus in fusiform aneurysm, local dissection of carotid or middle artery.

D. Cerebral Infarction of Undetermined Cause

II. TRANSIENT CEREBRAL ISCHEMIA WITHOUT INFARCTION

A. Intermittent Cerebral Ischemia (I.C.I.) or Transient Ischemic Attacks (T.I.A.) (previously called vasospasm, usually associated with thrombosis and atherosclerosis)

B. SYSTEMIC HYPOTENSION ("simple faint," acute blood loss, myocardial infarction, Stokes-Adams syndrome, traumatic and surgical shock, sensitive carotid sinus, severe postural hypotension)
1. With focal neurologic deficit
2. With syncope

C. Migrainous aura

III. INTRACRANIAL HEMORRHAGE (Including intracerebral, subarachnoid, ventricular, sometimes subdural)

A. Hypertensive Intracerebral Hemorrhage

B. Ruptured Saccular Aneurysm (if unruptured see IV A)

C. Angioma (if unruptured see IV B)

D. Trauma (including post-traumatic delayed apoplexy)

E. Hemorrhagic Disorders (leukemia, aplastic anemia, thrombopenic purpura, liver disease, complication of anticoagulant therapy, hyperfibrinolysis, hypofibrinogenemia

F. Of Undetermined Cause (normal blood pressure and no angioma even on most careful pathologic examination)

G. Hemorrhage into primary and secondary brain tumors

H. Septic embolism, mycotic aneurysm

I. With hemorrhagic infarction, arterial or venous see under I and VII)

J. Secondary brain stem hemorrhage (temporal lobe herniation)

K. Hypertensive encephalopathy

L. Idiopathic brain purpura

M. With inflammatory disease of arteries and veins (see under V, VII)

N. Miscellaneous rare types: after vasopressor drugs, upon exertion, during arteriography, during painful urologic examination in hypertensive patients, as a late complication of early-life carotid occlusion, complication of carotid-cavernous arteriovenous fistula, with anoxemia, migraine. (Acute inclusion body encephalitis produces xanthochromia and up to 2000 RBC or more in the CSF; acute necrotizing hemorrhagic encephalopathy may be associated with RBC in the CSF, tularemia may cause bloody CSF.)

IV. VASCULAR MALFORMATIONS AND DEVELOPMENTAL ABNORMALITIES

A. Aneurysm—Saccular, Fusiform, Globular, Diffuse (if ruptured see III B)

B. Angioma (including familial telangiectasis, trigeminal encephaloangiomatosis (Sturge-Weber-Dimitri), retinal-pontine hemangiomas) (if ruptured see III C)—during pregnancy angiomas may rupture or pre-existing symptoms and signs may be temporarily aggravated.

C. Absence, Hypoplasia, or Other Abnormality of Vessels (including variations in pattern of circle of Willis)

V. INFLAMMATORY DISEASES OF ARTERIES

A. Infections and Infestations
1. Meningovascular syphilis
2. Septic embolism
3. Arteritis secondary to pyogenic and tuberculous meningitis
4. Carotid inflammation secondary to cavernous sinus phlebitis or trigeminal herpes
5. Miscellaneous rare types (typhus, schistosomiasis mansoni, malaria, trichinosis, mucor mycosis, etc. —these do not produce a frank inflammation)

B. Diseases of Undetermined Origin
1. Lupus erythematosus
2. Polyarteritis nodosa (necrotizing and granulomatous forms)

continued on next page

3. Temporal arteritis
4. Idiopathic granulomatous arteritis of aorta and its major branches (Takayasu's disease)
5. ? Rheumatic arteritis
6. ? Thromboangiitis obliterans
7. Miscellaneous rare types

VI. HYPERTENSIVE ENCEPHALOPATHY
- A. Malignant Hypertension (essential, chronic renal disease, pheochromocytoma, etc.)
- B. Acute Glomerulonephritis
- C. Eclampsia

VII. DURAL SINUS AND CEREBRAL VENOUS THROMBOSIS
- A. Secondary to Infection of Ear, Paranasal Sinus, Face, or Other Cranial Structures
- B. With Meningitis and Subdural Empyema
- C. During pregnancy or postpartum
- D. Postoperative
- E. Hematologic disease (polycythemia, sickle-cell disease)
- F. Debilitating states (marantic)
- G. Cardiac failure and congestive heart disease
- H. Miscellaneous rare types
- I. Of undetermined cause

VIII. STROKES OF UNDETERMINED ORIGIN

IX. VASCULAR DISEASES WITHOUT CHANGES IN THE BRAIN
- A. Atherosclerosis
- B. Hypersensitive Arterio—and Arteriolosclerosis
- C. Hyaline arterio—and arteriolosclerosis with and without necrosis
- D. Calcification and ferruginization of vessels
- E. Capillary sclerosis, pericapillary material in Alzheimer's disease

continued from page 28

transient global amnesia, postural hypotension, insulin reaction, etc.

Anticoagulants might also prove of value in preventing another stroke in cases in which one stroke or more has already occurred, but proof of this will require study of a large number of cases over a prolonged period of time. At present such a study is being carried out under the aegis of the United States Public Health Service, seven centers — at Los Angeles, Miami, Atlanta, Durham, Philadelphia, New York and Boston — co-operating in the collection of data. It is still too early to report any trend, pro or con anticoagulant therapy. It is also possible that anticoagulants when administered to patients with an acute fully developed stroke might decrease mortality and reduce the residual paralysis by preventing extension of the thrombus or hindering clotting of the blood in the collateral channels, but again a large series of cases would have to be studied methodically in order to decide these points.

Anticoagulants to be sure are a stop-gap therapy and are doomed to failure as the atherosclerotic process advances.

B. *Surgical methods:* It is important to realize that in the majority of patients (possibly four out of five), with cerebral thrombosis in the *large* vessels of the carotid system (i.e., carotid, middle cerebral, anterior cerebral) the occlusion lies extracranially in the cervical portion of the carotid arteries. In 90 per cent of these the primary site of narrowing is strikingly limited to the carotid sinus at the origin of the internal carotid artery. The atherosclerotic deposition itself is strictly segmental and localized, lending itself to easy surgical extirpation, but unfortunately, once the occlusion becomes complete, stagnation of blood flow occurs and thrombosis often spreads distally producing a long stretch of organizing thrombus, extending upwards intracranially where it cannot be reached surgically.

Since 1951[5] when the use of surgical methods for the restoration of the circulation in the cervical arteries supplying blood to the brain was first suggested, bypass grafting and thromboendarterectomy have been practiced with increasing frequency. For example, DeBakey et al.,[6] have recently reported their results in 63 patients. They classify occlusions as proximal (near arch of aorta) and distal (at or near the carotid bifurcation) and as total and partial. For long proximal occlusions the bypass graft sometimes with multiple mouths is often preferable to thromboendarterectomy because of the larger vessels involved. For distal occlusion endarterectomy is usually more feasible. (See Figures 1 and 2.) Here again the principle of prevention pertains, for the best results are to be expected if operation is undertaken early before total occlusion and extension of the thrombus occur, or with minimum delay if the stroke has already appeared. It is probably useless to operate after permanent maximum damage to the brain has occurred.

In regard to vertebral artery occlusion in the neck, it might be pointed out that in a personal series of approximately 100 cases in which the vertebral arteries in the neck were dissected at post-mortem, only one instance of total, thrombotic occlusion of the cervical vertebral artery which contributed to the clinical picture, was found. It is possible that marked narrowing at the origin of the vertebral artery from the subclavian can lead to attacks of basilar ischemia, but this remains to be demonstrated.

Several centers have reported satisfactory surgical results, the largest series being that of DeBakey et al., who in operations on 63 patients reported six deaths, three from neurologic illness and three from noncerebral conditions. Of the remaining 57 patients, in 47 the circulation was restored in one or more occluded vessels and only one patient was made worse. A persistent residual paralysis before operation was completely relieved in eight and improved in five. A progressive hemiplegia with

aphasia of 18 hours' duration was completely relieved in one case. None of the 13 patients with transient ischemic attacks before operation experienced them afterwards. Residual visual defects were improved in two cases, completely relieved in four. Claudication of the arm was relieved in 17 patients. The success achieved by the operation was maintained in all but four cases, one patient dying from myocardial infarction, one from occlusion of the opposite carotid, and two from recurrent carotid occlusion.

Of course, neurologic deficits often clear spontaneously in stroke patients and how the results just quoted compare with non-surgically treated cases or those in which anticoagulants are used is a matter of conjecture. Even if all the clinical data of the cases were provided in detail in the article cited, one could not judge the efficacy of therapy for there are still no comparable control data with which they can be compared. A randomized therapeutic trial would seem to be highly desirable. There are several additional aspects of carotid surgery which might be presented for consideration at this time. First of all it must be remembered that prior to surgery extensive arteriography of the carotid and vertebral arteries is necessary and therefore *all* radiological accidents or complications in *all* patients who are candidates for surgery, regardless of whether they actually come to operation, must be reckoned in the final results. This is mentioned because of the rather significant incidence in some centers of severe complications of arteriography in patients with cerebral vascular disease. Persistent hemiplegia, blindness and even death have been reported.

Since operation in internal carotid cases is feasible for the most part only at the stage of incomplete occlusion, the physician will be called upon to interpret the clinical significance of partial occlusions—a task requiring a broad neurologic experience with cerebral vascular disease. According to DeBakey et al., "all lesions in the vessels arising from the aortic arch, regardless of the extent of the obstruction, and all partial occlusions of the internal carotid and vertebral arteries in the neck are considered susceptible to operation." There could be considerable difference of opinion in a stroke-case with 50 per cent occlusion of the internal carotid artery as to whether cerebral embolism, a small lesion in the basilar territory or even an intracerebral hemorrhage was the main causative factor, rather than carotid stenosis. Accurate neurologic examination and diagnosis before and after the surgical procedure are absolutely essential in assessing the efficacy of surgery. The duration of the patency of the operated channels, especially graft-prostheses, should be determined by arteriography from time to time and the results in patients with re-occlusion

continued on next page

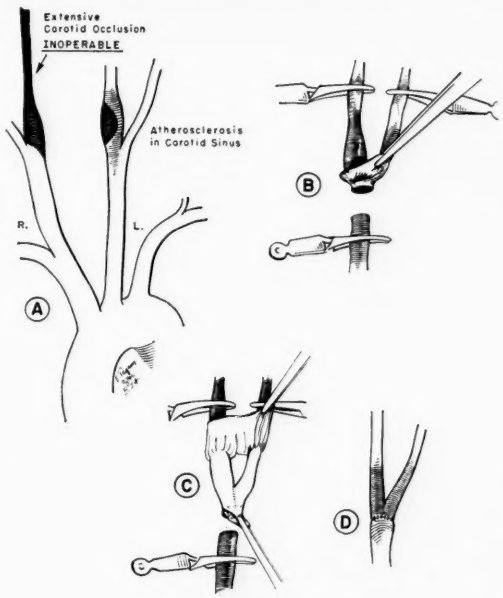


FIGURE 1

Diagram to illustrate the use of endarterectomy in occlusion of the internal carotid artery. The left side is the site of operation here (after DeBakey et al).

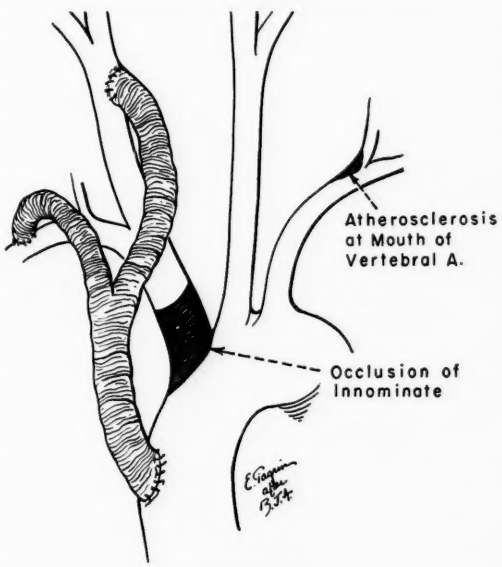


FIGURE 2

Diagram to illustrate the use of graft prosthesis in bypassing a proximal occlusion. The graft extends from the aortic arch to the subclavian and common carotid arteries. An atherosclerotic plaque at the mouth of a vertebral artery is removed by endarterectomy via the subclavian artery (after DeBakey et al.)

compared with those in whom the artery remains open. Also it would be preferable to keep results dealing with upper limb claudication and subclavian occlusion separate from those referable to the brain vessels. Furthermore, in studying the problem, postmortem studies must not be disregarded since they serve as an indispensable check on our general diagnostic acumen.

It might also be kept in mind that restoration of the patency of a large vessel could conceivably bring with it a disadvantage for it is known from pathologic studies that carotid stenosis or occlusion protects the distal part of the arterial tree from atherosclerosis and endarterectomy might therefore lead to aggravation of small vessel atheroma distally; or raising the pressure distally might even contribute to the occurrence of an intracerebral hemorrhage. Also since cervical arterial atherosclerosis is usually associated with aortic, coronary, iliac, and basilar-artery disease, a general measure such as anticoagulation might be more applicable to the problem than surgery; or anticoagulation might well be combined with endarterectomy, an arrangement now used in some clinics. Of course, endarterectomy might also be carried out at more than one site, aorta, femoral artery, coronary, carotid, etc.

Generally speaking we agree with the vascular surgeon's claim that a patent vessel is to be preferred to a totally or partially block vessel, but hasten to emphasize that operative mortality and morbidity, accuracy of diagnosis, long-term results and all the factors just mentioned above must be taken into account in assessing the desirability, necessity and effectiveness of these surgical procedures. One must not operate to no purpose.

Insofar as the circulation could not be restored in most patients with total internal carotid occlusion, DeBakey et al., no longer operate in such cases; yet, vertebral angiography is routinely carried out, hoping to find significant vertebral occlusion or stenosis. On the basis of our pathologic studies we would suggest that it would be more profitable to explore totally occluded internal carotid arteries than to pursue vertebral-artery disease with such vigor.

The above general criticisms aside, the surgical correction of occlusive disease of the large arteries of the neck promises to be of great value. Only further experience will provide clearer indications for operative intervention and the most desirable type of procedure. In the meantime we have not reached the point where every stroke patient is being managed negligently if an arteriogram is not performed, a suggestion of some enthusiasts.

II. *Cerebral Embolism.* Cerebral embolism is one of the most frequent causes of stroke and in some series its incidence runs well ahead of hemorrhage and almost as high as thrombosis. Most often the source of the embolus is thrombotic material on the wall of one of the left heart chambers, the atrium in atrial fibrillation, the ventricle in myocardial infarction. The use of long-term anticoagulants seems clearly to reduce the incidence of embolism as indicated by the figures of McDevitt and co-workers,[7] shown in Tables 3 and 4. In their studies the clinical course of a group of patients was followed, both while on and while off anticoagulant therapy and the number of thromboembolic episodes in the two periods was compared. Based on approximately equal periods the actual number of episodes was 52 as contrasted with an expected number of 172, in patients with rheumatic heart disease. In a group of patients with atherosclerotic heart disease, the respective numbers were 68 and 10. In these studies the patient acted as his own control. The periods off anticoagulants included the time from the first embolization to the beginning of therapy, and whenever therapy was interrupted for any reason. This is said to be a statistically valid method of procedure, but when a patient enters any therapeutic program, unrecognized non-specific influences may play a beneficial role, e.g., changes in diet and smoking habits, better control of cardiac failure, better management of cardiac arrhythmias and a healthier mode of living, etc. However, the experience of most clinicians tends to bear out the conclusion that

TABLE 3

Thromboembolic Episodes in 47 Patients with Rheumatic Heart Disease

	Total Patient Months	Thromboembolic Episodes	
		Total	Cerebral
Off Anticoagulant Therapy	1437	179[132]*	64[33]*
On Anticoagulant Therapy	1315	52(27)**	10(5)**

*Excluding the first episode.
**Prothrombin time $<$ 25.0 seconds.

TABLE 4

Thromboembolic Episodes in 25 Patients with Arteriosclerotic and/or Hypertensive Heart Disease

	Total Patient Months	Thromboembolic Episodes	
		Total	Cerebral
Off Anticoagulant Therapy	619	68[43]*	30[16]*
On Anticoagulant Therapy	432	10(7)**	3(3)**

*Excluding the first episode.
**Prothrombin time $<$ 25.0 seconds.

anticoagulants are of value in recent myocardial infarction and in atrial fibrillation insofar as thromboembolism is prevented. It should be emphasized that here again, it is prevention of the stroke that is the chief aim. When an embolic stroke has occurred, anticoagulants can be safely given after 12 hours if the spinal fluid is free of red blood cells.

In the prevention of embolism in rheumatic heart disease, valvulotomy and amputation of the appendage have clearly proved of value, although operation is by no means a guarantee against recurrence of embolism.

III. *Hypertensive intracerebral hemorrhage.* Here we refer to the ordinary intracerebral hemorrhage associated with elevated blood pressure. Whereas previously it was considered to be a fatal illness in all cases, a recent more careful postmortem analysis shows that one quarter to one third of patients survive and often make an excellent neurological recovery. Thus, an indiscriminate therapeutic assault on the lesion with the idea in mind that no harm can be done is hardly correct. Although neurosurgeons have made sporadic attempts at aspirating or evacuating the clot, their efforts were largely restricted to less acute cases in which signs of increased intracranial pressure had appeared in the days or weeks following the stroke. It is to be hoped and even expected that some rational therapy will be devised for the large number of patients who shortly after the onset, sink irretrievably hour by hour into coma and death. Howell's[8] heroic attempt to rescue some of these patients with a combination of hypothermia and surgical evacuation of the clot is to be commended despite the rather disappointing early results. We must establish criteria for early operation so as to spare those patients surgery who do not need it and yet not delay operative attack on the others until it is too late to hope for recovery. Hemorrhage at each different site must be treated as a separate problem with distinct surgical approaches according to the location of the hemorrhage, deep putaminal, superficial putaminal, thalamic, cerebellar, etc.; for example if a thalamic hemorrhage is evacuated from the lateral approach, the posterior limb, i.e., the motor part of the internal capsule is in danger of being irreparably damaged with resultant persistent hemiplegia.

The fundamental answer, however, to intracerebral hemorrhage lies in its prevention by the eradication or alleviation of hypertension, no matter its cause. Reserpine, Chlorothiazide, Methonium compounds and sympathectomy must be used with design and precision to deliberately bring the blood pressure to normal levels, if possible. Although everyone knows of the spry old lady, aged 90, whose blood pressure has been at dizzy heights since the sphygmomanometer was introduced, this must not blind us to the generally serious consequences of hypertension, even of low-grade, especially in men. At the same time as it is claimed that present-day anti-hypertensive therapeutic methods are decreasing the incidence of intracerebral hemorrhage, it must be admitted that the complications of anticoagulant therapy have slightly swelled the number of such hemorrhages.

IV. *Ruptured Saccular Aneurysm.* Ruptured saccular aneurysm accounts for approximately one in every twenty cerebral vascular mishaps. All clinicians are agreed that it is a highly lethal condition, but how lethal remains disputed. Surgical therapy particularly in the first week after rupture carries a high mortality and morbidity even in the hands of the best surgeons. Yet, it is said that the danger of re-rupture and death is greatest in that very period and therefore the need for surgery greatest. On the other hand, if the patient does not rebleed in the first few weeks, his chances of rebleeding in the near future are greatly diminished, but so are the mortality and morbidity from surgery greatly decreased. One of the difficulties or deficiencies in establishing therapeutic guideposts has been the lack of data dealing with a conservatively-treated group of cases with arteriographically proved aneurysms with which the surgically treated cases can be compared; only if the aneurysm can be demonstrated arteriographically will surgery be contemplated and therefore, cases should be included in the comparable conservatively-managed group only if the aneurysm is seen radiologically. In the United States there is at present a co-operative project embracing 26 medical centers for the purpose of collecting data on the subject and the clinic of McKissock in London, England, has joined in this effort. Mr. McKissock is actually randomizing his aneurysm cases into medically and surgically treated groups and six months from now, the results of this, the first scientific attempt to gather facts in this vexing problem will be available.

In the use of early operation, that is in the first week after rupture of the aneurysm, the best results have been achieved by Bottrell and his colleagues.[9] In the most favorable cases the immediate mortality was 15 per cent and in all the others a rather formidable 42 per cent. Operation after one week carried no mortality in the most favorable group and 20 per cent in all the others. Poppen and Fager,[10] in a large series of surgically treated patients, reported an equally low operative mortality and also a remarkable freedom from re-rupture in a long postoperative period. Of 101 patients treated by carotid ligation, 85 recovered without deficit, 11 recovered but with a significant neurologic deficit and only 5 died as a result of operation. In a follow-up period of one to 15 years only 2 patients died of recurrent hemor-

continued on next page

rhage from the treated aneurysm. Of 95 patients (with chiefly middle cerebral and anterior cerebral aneurysms) treated by intracranial surgery, 60 recovered without deficit, 11 recovered but had a deficit and 17 died as a result of surgery (18 per cent mortality). In a follow-up of 1½ to 14 years, only 2 died of recurrent bleeding. In each group about half of the patients underwent surgery one month or more after the hemorrhage and very few were operated on in the first week. Clear evidence of the efficacy of surgery in preventing bleeding was the fact that of a total of 201 survivors in the entire series reported, only 5 suffered a recurrence in one to 15 years. It would appear that surgery has a great deal to offer in ruptured aneurysm, but the indications and time for surgical intervention and the type of operation await further clarification. Direct intracranial attack on the aneurysm seems a more logical procedure than ligation of the carotid artery in the neck. Indeed we have the paradox of one group of surgeons unblocking the carotid artery in atherothrombotic occlusion, and in the adjoining surgical theater their colleagues are busy ligating the system for aneurysm.

Cerebral angioma, the other major cause of primary subarachnoid hemorrhage, is generally speaking far less life threatening than aneurysm. Therefore, therapy is less urgent. Surgical block dissection of the lesion is feasible in a small number of cases. Ligation of the major feeding artery has been effective in a few instances. X-ray therapy long used but then abandoned in the treatment of this condition has recently been resurrected, a long-term follow-up of some of the irradiated patients, showing a remarkable decrease in the size of the lesion months or years later.

Preventive Measures in Atherothrombosis

Allusion was made previously to the broad question of the prevention of atherosclerosis and thrombosis. Although scientific proof for some of the measures to be presently described is lacking, a broad body of clinical knowledge lends support to the view that these suggestions concerning diet, smoking, etc. should not be idly dismissed. At present, we advise our atherosclerotic patients to eat a diet of low-fat content (25 grams of fat per day). Kinsell[11] states that until more information is available, diet to normalize high blood cholesterol calls for moderation in the use of meat, eggs and dairy products, the exclusion of hydrogenated fat and some emphasis on fish. Critics of this form of therapy refer to it as the "low-fact regimen." We have not been impressed with the long-term cholesterol-lowering effect of supplemental unsaturated oils. Our patients are strongly advised to stop smoking. Although proof for this view is not available, we have been particularly impressed with the salutary effect of cessation of smoking on the clinical course of transient cerebral ischemic attacks; furthermore, almost every thrombotic stroke patient, male, or female, whom we have encountered under the age of 50 has been a cigarette smoker. Hammond and Horn[12] reported their startling finding that cigarette smoking was associated with a remarkable increase in the incidence of fatal coronary-artery disease between the ages of 45 and 59. The mechanism of action of tobacco in vascular disease needs to be investigated further.

The desirability of reducing the blood pressure to normal levels has already been mentioned. In regard to physical exercise, so widely recommended as a means of encouraging the collateral coronary circulation, it is my impression that the atherosclerotic process in the cerebral arteries may not be benefited by the increased blood flow and enhanced pressure incident to exercise. Furthermore, one man's meat may be another's poison and in exercising it makes a difference whether one weighs 135 pounds or 200 pounds. The human dynamos of 190 or 200 pounds may uneventfully pass their 40th year or even the 50th, but before the age of 60 most have fallen by the wayside through myocardial infarction or stroke. The hurried, rushing, impatient, restless, hectic, tireless, over-expenditure of energy evokes its toll prematurely. Many of our laborers are too fat for the type of hard work they indulge in. There are statistics to tell us that as the beltline lengthens the lifeline shortens, but there are no comparable statistics to tell us of the advantage of remaining below the recognized average weight for a given size and age; we would suggest that the so-called "normal" weights for men listed in present-day tables are set too high, representing average weight and not the normal or desired weight. Is it too radical to recommend that no man should weigh more than 170 or 175 pounds regardless of his height! Thus, in addition to the recommendations regarding diet, tobacco and blood pressure, we advise rather marked weight reduction, judicious exercise and a certain ease or dignity or sedateness of action and thought, especially in patients inclined to portliness.

In closing, I think it can be rightly claimed that at present there is action on the stroke front; modest progress has been made and mankind can look forward to further advances in the not too distant future.

BIBLIOGRAPHY

[1]A Classification and Outline of Cerebrovascular Diseases. Neurology 8:1, 1958

[2]Fisher, M., and Cameron, D. G.: Concerning cerebral vasospasm. Neurology 3:468, 1953

[3]Millikan, C. H.; Siekert, R. B., and Shick, R. M.: (a) Studies in cerebrovascular disease III. The use of anticoagulant drugs in the treatment of insufficiency or thrombosis within the basilar arterial system. Proc. Staff.

concluded on page 44

COLOVESICAL FISTULA: A COMPLICATION OF DIVERTICULITIS*

ORLAND F. SMITH, M.D. AND RICHARD S. ROSEN, M.D.

The Authors. *Orland F. Smith, M.D., Surgeon-in-Chief, the Memorial Hospital, Pawtucket, Rhode Island. Richard S. Rosen, M.D., Senior Resident in Surgery, the Memorial Hospital, Affiliate from Boston University Service, Boston City Hospital, Boston, Mass.*

DIVERTICULITIS with its various complications has been known to medicine for many centuries, but surgeons throughout the world today are reevaluating their concepts of this disease and its complications. The purpose of this paper is to consider some of these changing concepts as they relate to the management of diverticulitis in general and to one of its complications—colovesical fistula—in particular.

A change in thinking about this disease has resulted from a better appreciation of the severity of its complications, a real increase in frequency in an aging population, and a markedly decreased mortality rate from surgical intervention. As recently as twenty years ago, Pemberton reported a surgical mortality of 14.7 per cent for large bowel procedures at the Mayo Clinic, a figure that was to drop to 4.2 per cent with the advent of the sulfa drugs; today with modern chemotherapy, blood transfusion, and anesthesia advances, this figure is less than two per cent.[17] The mortality following surgery associated with fistula is reported by Kellogg as 25 per cent only twenty years ago.[12] While these figures have dropped markedly with the advances in treatment, the economic and sociologic effects of prolonged hospitalization and the morbidity of the multi-staged procedures have remained unchanged until recently. Because of these factors, surgical intervention in diverticulitis in the past has been limited to complications of the disease. Today, many are avoiding the more serious complications by earlier elective surgery.

Fistula formation between the bowel and bladder has been recognized since as early as the second century when the Ephesian physician Rufus cited a case. In 1858, Jones reported a case of fistula secondary to diverticulitis proven at autopsy, and about the same time Curling and Pennell performed colostomies as a treatment for colovesical fistulas. Interest began to rise after Sir Harrison Cripps's classic monograph in 1885 in which he recognized the importance of inflammatory lesions in fistula formation and advocated proximal colostomy. Since then the literature has reported increasing accounts of the disease and treatments varying from bladder fulguration to radical excision.[2,3,5,11,18]

The number of people with diverticulitis requiring surgery in the past for its complications has been generally estimated as between 10 and 25 per cent.[9,17,21,23] Pemberton reports surgery performed in 144 of the 600 cases at the Mayo Clinic (24 per cent). By far the majority of these cases have their disease limited to or primarily in the sigmoid colon. Welch reports 90 per cent of the cases at the Massachusetts General Hospital were found primarily in the sigmoid,[22] and Hayden and Krolicki found 70 per cent in the sigmoid alone and 86 per cent limited to sigmoid and descending colon. The predilection for the sigmoid colon may be related to its narrow bore, angulated course and solid content, all tending to increase local trauma and wear and tear through the years.

A preponderance of males to females has been found in most series running about 2 to 1. Pemberton reports the youngest male at twenty-nine years, the youngest female at thirty-three. The disease is unusual under the age of forty; indeed no cases were seen under thirty-five years of age in 2,000 consecutive barium enemas at the Massachusetts General Hospital.[21] Thereafter, the incidence rises steadily. Predisposing factors seem to include obesity, flatulence and chronic constipation although Yeager[23] feels the latter two findings along with abdominal distention may actually be caused by simple diverticulosis.

The complications of diverticulitis which have generally been considered as indications for surgical intervention are intractability, perforation, obstruction, hemorrhage, confusion with carcinoma and fistula formation. It is with the latter complication that we are especially concerned today.

The real incidence of fistula formation is somewhat difficult to determine since most figures come from large clinics which naturally are exposed to more complicated problems. Thus Mayo and

continued on next page

*Presented at the John F. Kenney Clinic, the Pawtucket Memorial Hospital, Pawtucket, Rhode Island, November 18, 1959.

Blunt[14] report 202 cases of proven diverticulitis with forty-six patients having fistulous tracts between the sigmoid and the urinary bladder at surgery (22.8 per cent). Certainly this figure is higher than is usual with most authors giving figures of 5-10 per cent in patients undergoing surgery. In Waugh's series for the succeeding ten years at the same clinic, 5 per cent of the patients had fistula formation as the indication for surgery, although an equal number had urinary symptoms and at operation, the sigmoid was adherent to the bladder with impending fistulas.[20] Welch, Allen and Donaldson report a 10 per cent incidence at the Massachusetts General Hospital in resected cases, amounting to 2 per cent of all patients seen with diverticulitis.[21]

The role of diverticulitis in the pathogenesis of colovesical fistula is now better established. Through the years, it has maintained the leading position in competition with various inflammatory conditions including tuberculosis, salpingitis and pelvic abscess from any cause. More recently, with the decreasing incidence of these conditions, diverticulitis is recognized as the causative factor in over half the cases in all series and the site of fistula is almost always in the sigmoid. Barnes and Hill[2] report gastrointestinal tract malignancy as the second most common cause, occurring in 25 per cent and genitourinary tract malignancy next with less than 10 per cent of the total. Colcock[4] found only two per cent of fistulas associated with carcinoma. Fistulas in diverticulitis can also be associated with other organs such as the vagina, other parts of the bowel or skin.

The incidence of fistula by age parallels the general age incidence of diverticulitis, being most common in the 50-70-year group. Some authors[2] report the same sex ratio as the basic disease but most agree that there is a real difference with fistulas occurring five times as frequently in males as in females.[8,14,20] The location of the uterus between the inflamed sigmoid and the bladder probably accounts for most of this difference, the uterus serving as a mechanical barrier.

The pathogenesis of a colovesical fistula has been well described by Mayo and Miller[15] and others. However a diverticulum may form, once started, it undergoes progressive enlargement as the overlying muscle thins out to form a small sac with a narrow neck, which is subject to retained feces, perhaps inspissated; the resulting mechanical irritation, plus the always present bacteria, produce inflammation. This inflammatory process involves the peridiverticular tissue and in time with sufficient adjacent diverticula will form tumefaction and stenosis of the bowel, which in turn will tend to increase the basic disease. Small walled-off perforations may occur within the mesentery and the friable inflamed mesentery may then become adherent to any adjacent structure. Such a loop in contact with the bladder may give symptoms of cystitis even if no fistula has yet developed. Such a fistula may be produced whether or not there has been a true abscess cavity between the sigmoid and the bladder.

This supposed pathogenesis while possibly occurring during a single acute episode is more likely to be a prolonged process; bladder symptoms may be present for months or even years before the patient comes to surgery. The important point is that symptoms may be present months before the actual fistula and in many cases, early recognition and treatment may prevent this complication.

The symptoms of colovesical fistula are referable to the two organ systems involved. Many patients are first seen by the practitioner or the urologist because of urinary symptoms. Eight of Mayo and Miller's 54 patients complained of only bladder symptoms and further investigation showed the bowel disease.[15] More frequently symptoms of bowel disorder are present but overshadowed by complaints of dysuria, frequency or urgency and many of these patients are treated for cystitis for months before the true nature of their disease is discovered. Occasionally, a patient presents with no complaints referable to the bladder.

The findings of pneumaturia and fecaluria are pathognomonic of a fistula between the two organ systems. Pneumaturia itself is the most reliable single finding although not absolutely diagnostic. It can also result from previous introduction of air by instrumentation such as cystoscopy or catheterization. In addition, gas forming organisms can infect the urinary tract, especially in diabetics.[6] In Mayo and Blunt's series[14] 40 of 46 cases had pneumaturia for a length of time varying from two days to 13 years with an average of 17.3 months. In each series recorded, this symptom is present in about 90 per cent of the cases. Frequency, dysuria or urgency are also common complaints but not as constant, varying from 50 to 70 per cent. These symptoms frequently precede the pneumaturia as suggested earlier and in part probably represent precursory symptoms. Some patients will report a history of general symptoms to be followed in time by the sensation of something giving way and an explosive onset of air in the urine accompanied by blood or even feces. The presence of fecaluria was noted in almost half of Mayo and Blunt's series but most authors report it slightly less frequently. In any case, these symptoms may vary as edema of the bladder wall varies the size of the fistulous opening.

Another frequent finding is pain, usually suprapubic, but sometimes genital or perineal. The pain may start some time after the onset of pneumaturia

and is probably related to inflammation and edema of the bladder. Hematuria, either gross or microscopic, often occurs and is probably related to the co-existing cystitis and trauma to the bladder. An occasional patient will report passing urine in his stool or diarrhea, but these findings are much less common.

Some cases of ascending pyelonephritis or pyelitis are seen but these are fortunately not common. Seminal vesiculitis, epididymitis and fecal vesical calculi are also unusual.[18] Recurring bouts of fever, sometimes with chills, occur frequently and an occasional patient will present with a severe necrotizing cystitis.

The demonstration of a fistula in most cases is difficult. Cystoscopy is the most reliable approach although it is unusual to see the fistula orifice. More commonly an area of inflammation is seen with edema in the bladder fundus, often on the left side. Barnes and Hill[1,2] report positive findings in 21 of 26 patients at cystoscopy, a finding duplicated by Mayo and Blunt[14] and others. Frequently, one may see a granulating area with a central depressed necrotic zone; occasionally one may identify gas bubbling through the orifice. Interpretation may be difficult. Martin has reported two cases diagnosed at cystoscopy as bladder carcinoma with microscopic biopsy reports highly suggestive of low-grade bladder malignancy. At operation, both of these cases were proven to be benign colovesical fistulas.[13] Biopsy in these cases is not without danger and colovesical fistula resulting from primary bladder carcinoma with co-existing diverticulitis is quite unusual. We do not believe biopsy should be done if a fistula is suspected in a patient who has diverticulitis.

Cystograms demonstrate the fistula much less frequently, but may help. Barium enema studies are even less reliable in outlining the tract; they showed a fistula in only one of 17 cases reported by Barnes and Hill, but are important in establishing the basic diagnosis of diverticulitis. Dye studies with methylene blue or similar materials may occasionally be helpful but generally are not worthwhile. Sigmoidoscopy should be included in the study to rule out other pathology but usually will not reach the involved area. In many cases, the definitive diagnosis may not be made until the time of laparotomy.

Two principles are evident for the successful management of a colovesical fistula; surgery must be undertaken and that surgery must include resection at some stage, if permanent colostomy is to be avoided. Reports of recurrence are the rule when a colostomy is closed without resection, even though the bowel may have become quiescent while defunctionalized. Pemberton[17] reports 20 recurrences in 31 patients treated in this manner, and all agree today that once a patient undergoes a colostomy for diverticulitis, he must eventually be resected if the colostomy is to be closed.

The problem today lies in the choice between a time-consuming multi-staged procedure and a questionably more dangerous single-stage procedure. With the advances in surgery and anesthesia and with decreased morbidity and mortality rates, the trend is toward the latter in cases of diverticulitis with or without fistula.[16] Thus Smithwick[19] reported only six such procedures from 1928-1942 at the Massachusetts General Hospital and Welch found 40 per cent of the procedures were single-staged in the next ten years.[21] This feeling is by no means unanimous and Colcock[4] states that at the Lahey Clinic, all resections for colovesical fistula secondary to diverticulitis are done in three stages with a preliminary colostomy.

We feel that colovesical fistula *per se* is not a contraindication to single-stage resection. We believe that this surgery should be undertaken as an elective procedure with a complete bowel preparation. The decision should be made at laparotomy as to whether the individual needs can be best met by resection and anastomosis or by preliminary colostomy. If the area of involvement is not unusually long, if there is no large abscess complicating the condition, if the proximal bowel is not unduly dilated, and if the patient's general condition permits, then we feel resection of the diseased bowel and fistula with closure of the fistula and end-to-end anastomosis of the bowel is the procedure of choice. If the inflammatory condition of the bowel is such that dissection is hazardous or if a large abscess is present, we feel that proximal diverting colostomy should be performed with drainage of the abscess if indicated. In the event that resection is feasible but anastomosis at all questionable, then a concomitant colostomy should be performed. If there is a question of carcinoma, it may be preferable to do a colostomy giving the bowel a two-week period of rest before attempting the wider dissection involved.

There is divergent opinion as to the most satisfactory method of anastomosis. Some feel an open anastomosis with two layers where possible, is less liable to constriction[21] while others find no difficulty with a closed anastomosis. Waugh reports 40 per cent of the closures at the Mayo Clinic by this technique using a Rankin clamp with only one stenotic suture line in 300 cases.[20] We prefer the latter technique using a single layer of silk sutures placed carefully 2 mm. apart; the senior author of this paper has performed this type of bowel anastomosis in 130 consecutive instances with no deaths, no stenotic suture lines and only two cases of leakage at the anastomosis, both of which did well following secondary operation.

continued on next page

The bladder is handled simply by inverting sutures at the fistula site and these should be placed whether or not the fistula seems to have closed. Frequently a probe cannot be passed through this opening, but a patent orifice will be demonstrated in the specimen. Constant drainage by indwelling catheter is used postoperatively. The results following resection for diverticulitis and colovesical fistula are excellent; few should recur except for the occasional case where insufficient bowel is resected.

Two cases are presented to illustrate the differing management:

Case No. 1

R.S., a fifty-six-year-old white male, was admitted to the Pawtucket Memorial Hospital with a four-month history of dysuria, frequency and intermittent pneumaturia. Just prior to the onset of pneumaturia he had had an episode of fever and left lower quadrant pain. Past history revealed episodes of vague left abdominal pains for ten years; six years before admission he had had some severe left lower quadrant pain and intravenous pyelography then was negative. On admission there were no positive physical findings. Urinalysis was positive for albumen, WBC, and oil droplets. Cystoscopy revealed a bladder lesion suggestive of a fistula. Retrograde pyelography was negative. A barium enema revealed diverticulitis with a thin linear collection of barium outside the lumen extending toward the urinary bladder. Sigmoidoscopy was not informative. The patient was discharged with the diagnosis of colovesical fistula to be readmitted at a time more convenient to him for surgery. Three months later he was admitted for transverse colostomy. During the interim he had continued to have pneumaturia and had developed fecaluria; four separate attacks of urinary symptoms with fever had responded to gantrisin. On this admission, he exhibited some left lower quadrant tenderness but there was no palpable mass. The patient was then lost to follow-up for some time but was readmitted eight months later with no complaints except for occasional suprapubic pains; pneumaturia had ceased. After antibiotic bowel preparation, he underwent resection of his fistulous tract and 15 cm. of sigmoid. Closure was in two layers below the peritoneal reflection and the area was drained. Although the fistula seemed closed, the bladder was turned in at surgery; the specimen later showed a patent fistula opening. He did quite well postoperatively and was discharged on the ninth postoperative day, after a course of antibiotics. After a normal barium enema he was again admitted six weeks following resection to have his spur crushed but the procedure was abandoned because it caused too much discomfit. Accordingly, his final admission was two months later, fifteen months after his first, when his colostomy was closed and the hernial defect repaired. He has been asymptomatic since and a follow-up barium study was normal.

Case No. 2[7]

M.S., a sixty-six-year-old white male was admitted to Pawtucket Memorial Hospital with a ten-year history of recurring left lower quadrant pains and a two-month history of dysuria and terminal pneumaturia, starting with an episode of hematuria. For three weeks, he had had painful swelling of the left scrotum. Past history included a coronary thrombosis twelve years previously. On admission, physical findings were not remarkable. Urinalysis showed many RBC's and WBC's. Urine culture grew intestinal organisms. Intravenous and retrograde pyelography were normal. At cystoscopy a 2 cm. raised area was seen in the bladder floor near the posterior wall; this was resected and the base fulgurated. Microscopically the tissue showed edema, hyperemia, and lymphocytic infiltration and was diagnosed as chronic cystitis. The patient was discharged with the diagnosis of epididymitis and ? fistula, ? carcinoma. He was readmitted three months later after continuing pneumaturia and pyuria. A barium enema then showed many diverticula and spasm of the sigmoid. Cystoscopy revealed a mildly injected bladder wall with a nodule in the same area as previously seen. Again a biopsy was reported as showing chronic cystitis. The definitive diagnosis was made after the patient was given poppy seeds by mouth later retrieved in the urine. He was discharged to be readmitted one month later for surgery. After bowel preparation with sulfasuxidine and neomycin, he was taken to the operating room but the procedure was postponed because of rapid auricular fibrillation. This responded to medical therapy and four days later single-stage sigmoid resection and closure of his colovesical fistula was performed. The resected specimen measured 20 cm. Open anastomosis was performed in two layers and the area was drained. Postoperatively he was treated with antibiotics and bladder drainage, did well and was discharged on the tenth postoperative day. He has remained symptom-free.[7]

SUMMARY AND CONCLUSIONS

1. Colovesical fistula as a complication of diverticulitis is discussed.

2. Diverticulitis is twice as common in males as in females; fistula formation is five times as frequent in the male.

3. Surgical indications in diverticulitis are intractability, perforation, obstruction, hemorrhage, confusion with carcinoma and fistula formation.

4. Colovesical fistula may be present in 3 to 10 per cent of resected cases.

concluded on page 40

SPONTANEOUS RUPTURE OF HERNIAE

WARREN W. FRANCIS, M.D.

The Author. *Warren W. Francis, M.D., of Providence, Rhode Island, Assistant Surgeon, Rhode Island Hospital.*

SPONTANEOUS RUPTURE of a hernia through the skin is a dramatic and, fortunately, unusual occurrence. There have been only two case reports in the American literature.[1,2] In 1958, however, Helmig gathered forty-six cases from the international literature and published an excellent summary in a Swiss journal.[3] He noted that conditions increasing intraperitoneal pressure and those causing changes in the overlying skin were the common predisposing factors. The cases he reviewed were umbilical in sixteen, incisional in eighteen, inguinal in seven, and femoral in five. Since 1910, the treatment has been immediate herniorrhaphy, and the results have been uniformly successful.

Two patients with spontaneous rupture of herniae have been treated at the Rhode Island Hospital.

Rhode Island Hospital #544800

C. L., a sixty-eight-year-old white male, was admitted to the Rhode Island Hospital in June 1955 for abdominal paracentesis.

Eight months prior to this admission, patient had an extensive work-up to determine the cause for massive ascites. Liver biopsy revealed focal fibrosis and chronic hepatitis but no evidence of cirrhosis. There were no esophageal varices demonstrated by X ray, portal pressure was within normal limits, and no malignant cells were seen on cytological examination of the ascitic fluid. A subcutaneous space was developed in the right lower quadrant and a Cooney button was inserted through a McBurney incision connecting this "lake" with the peritoneal cavity in an effort to increase absorption of ascitic fluid.

Patient did well for five months following this procedure, requiring no paracenteses until April 1955 when he was readmitted for excision of the subcutaneous "lake" which had become cyst-like.

His present admission was for aspiration of fluid from a new subcutaneous "lake."

Physical examination revealed blood pressure 150/80, pulse 80, respirations 30, temperature 99. Heart was enlarged with evidence of auricular fibrillation. Lungs were clear. Abdomen was tense with a cyst-like swelling of the abdominal wall in the right lower quadrant. A large umbilical hernia was present. The skin overlying the hernia and that of the right lower quadrant was ulcerated.

Laboratory data included hemoglobin 12.6 gms.%, WBC 12,400 with 87% polys, total protein 4.6 gms.%, albumin 2.2 gms.%, blood urea nitrogen 14 mgms.%. X ray of the abdomen revealed a small aörtic aneurysm.

Course The subcutaneous "lake" was aspirated on two occasions and 6700 cc. of fluid were obtained. On antibiotic therapy and local treatment, the skin ulcerations improved. Suddenly, on the sixteenth hospital day, the umbilical hernia ruptured spontaneously during the night and omentum protruded onto the abdominal wall. Patient was taken to the operating room where, under spinal anesthesia, a portion of the omentum was resected and routine umbilical herniorrhaphy was performed. Except for a minor wound infection, the postoperative course was uneventful and patient was discharged on the sixteenth postoperative day.

Rhode Island Hospital #599870

P. K., a two-year-old white female, was admitted to the Rhode Island Hospital in August 1958 with omentum protruding through a ruptured umbilical hernia.

Fourteen months prior to this admission, a diagnosis of nephrotic syndrome had been made. Since that time, patient had been followed both at the Rhode Island Hospital and Children's Medical Center, Boston. She had received diuretic therapy, steroids, and special diet. Just prior to this admission, she had been on a regimen of terramycin, hydrocortisone, diuril, KCl, and ACTH at a chronic disease hospital. About one day prior to admission, drainage had been noted from the umbilical hernia.

Physical examination on admission revealed a temperature of 100.4 and a pulse of 140. Significant findings were limited to the abdomen which was protuberant with evidence of ascites. The skin over the umbilical hernia was ruptured and omentum was protruding.

Laboratory data included WBC 28,800 with

concluded on next page

80% polys. Hemoglobin 11.5 gms.%. Urinalysis showed 4+ protein. Blood urea nitrogen 17 mgm.%, total protein 3.4 gms.%, albumin 0.9 gms.%

Course Patient was taken to the operating room where, under general anesthesia, a portion of the omentum was resected and routine umbilical herniorrhaphy was performed. The postoperative course was uneventful and patient was discharged to the chronic disease hospital on the sixteenth hospital day.

Discussion

Both cases reported here had increasing intraperitoneal pressure, and the first patient had skin changes as well. Undoubtedly, chronic disease with resulting hypoproteinemia played a major role in both. Whether the steroid therapy in the second patient was a factor is impossible to determine.

CONCLUSIONS

A review of the literature and the limited experience here reported would certainly suggest that immediate surgical repair is indicated and a good result can be expected in patients with spontaneous rupture of herniae.

References

1 Bontecou, R. B.: Rupture of an umbilical hernia, and escape of a large mass of intestines; peritonitis, opium, recovery. Am. M. Month., N. Y., 1858, x p. 341-44

2 Lerner, S., and Rost, M. D.: Spontaneous Abdominal Paracentesis. J.A.M.A., 170:1310, 1959

3 Helmig, Von H.: Uber sogenannte Spontanrupturen von Hernien. Schweizerische medizinische Wochenschrift, 88:662 (July 5) 1958 (Abs: Internat. Surg. Digest, 66:360, Dec. 1958)

DID YOU KNOW?

- **That, since the 1930s, admission rates to general hospitals for treatment of ulcers have quadrupled, and admissions for heart disease have tripled.**
- **That, in the same period, admission rates for treatment of appendicitis have been cut almost in half.**
- **That a survey of dentists revealed that three out of five dentists charge lower fees for children than for adults.**
- **That the same dental survey indicates that the bigger the city, the bigger the dental fee.**
- **That nine out of every ten persons who have hospital expense insurance also have protection against the cost of surgery.**

Patronize Journal Advertisers

COLOVESICAL FISTULA: A COMPLICATION OF DIVERTICULITIS

concluded from page 38

5. The symptoms of colovesical fistula are dysuria, pneumaturia, fecaluria, hematuria, frequency, urgency and suprapubic pain, in association with episodes of left lower quadrant pain.

6. Treatment for cure must include resection of the diseased bowel. This may be done by single-stage or multi-stage procedure.

Bibliography

1 Barnes, R. W., and Hill, M. R.: Intestinovesical Fistula, Calif. and West, 56:350-355 (1942)

2 Barnes, R. W., and Hill, M. R.: Intestinovesical Fistula, J.A.M.A., 133:456-458 (1947)

3 Bors, E., and Kudish, H. G.: Intestinovesicula Fistula: Report of six cases, J. Urol., 72:365-373 (1954)

4 Colcock, B. P.: Surgical Management of Diverticulitis, Surg., Gyn., and Obst., 102:721-728 (1956)

5 Cripps, H.: The Passage of Air and Faeces from the Urethra. Lancet, 1888 (2) :371

6 Douthwaite, A. H.: French's Index of Differential Diagnosis, Williams and Wilkins 635-636 (1954)

7 Eddy, J. P.: Personal communication

8 Ewell, G. H.: Intestinovesical Fistula, J. Urol., 71:603-607 (1954)

9 Frykman, H. M.: Sigmoidoperineal Fistula from Diverticulitis of Sigmoid Colon, Minn. Med., 39:513-516 (1956)

10 Hayden, E. P., and Krolicki, T. A.: Diverticulitis, Trans. Amer. Proct., Soc., 1946

11 Higgins, C. C.: Vesicointestinal Fistula, J. Urol., 36:694-709 (1936)

12 Kellogg, W. A.: Vesicointestinal Fistula, Amer. J. Surg., 41:135-186 (1938)

13 Martin, J. D.: Vesicocolic Fistula Complicating Diverticulitis of the Colon, Amer. Surg., 22:645-651 (1956)

14 Mayo, C. W., and Blunt, C. C.: Vesicosigmoidal Fistulas Complicating Diverticulitis, Surg., Gyn., and Obst., 91:612-616 (1950)

15 Mayo, C. W., and Miller, J. M.: Surgical Treatment of Sigmoidovesical Fistulas, Arch. Surg., 40:897-911 (1950)

16 Ormond, J. K.: Vesicointestinal Fistulas: Report of two cases of fistulas between bladder and large intestine cured without preliminary diversion of the fecal stream, J. Urol., 61:554-556 (1949)

17 Pemberton, J. de J.; Black, B. M., and Maino, C. R.: Progress in the Surgical Management of Diverticulitis of Sigmoid Colon, Surg., Gyn., and Obst., 85:523-534 (1947)

18 Peters, H.: Vesicointestinal Fistulas, Int., Abst. Surg., 69:582-588 (1939)

19 Smithwick, R. H.: Experiences with the Surgical Management of Diverticulitis of the Sigmoid, Ann. Surg., 115:969-982 (1942)

20 Waugh, J. M., and Walt, A. J.: Appraisal for One-stage Anterior Resection in Diverticulitis of the Sigmoid Colon, Surg., Gyn., and Obst., 104:690-698 (1957)

21 Welch, C. E.; Allen, A. W., and Donaldson, G. A.: An Appraisal of Resection of the Colon for Diverticulitis of the Sigmoid. Ann. Surg. 138:332-343 (1953)

22 Welch, C. E., and Rodkey, G. V.: Methods of Therapy in Diverticulitis, Surgery, 39:712-723 (1956)

23 Yeager, G. H.: Definitive Radical Resection of the Large Bowel for Recurrent Diverticulitis. Amer. Surg., 22:611-614 (1956)

THE OTHER APPENDICEAL CONDITIONS

RAYMOND N. MACANDREW, M.D.

The Author. *Raymond N. MacAndrew, M.D., Assistant Surgeon, Department of Surgery, Rhode Island Hospital, Providence, Rhode Island.*

THE VERMIFORM APPENDIX still has many mysteries for those who seek to understand. The mysteries are due to the lack of attention we give this important organ concerning its ability to become pathologic and to the constant surprises we are now and then receiving from what we thought preoperatively to be a case of acute appendicitis. Every surgeon can tell of the difficulties in diagnosis and treatment of acute appendicitis, but very few ever see enough of the "other appendiceal conditions," to be competent and ready to speak from personal experience.

A study of 50,000 appendices was made by Collins of California and showed that the total of pathologic conditions which can affect the appendix is startling: Of the 50,000 organs ninety per cent were removed surgically; the balance came from autopsies. The material was supplied by several hospitals in California and Minnesota. The period covered was thirty-two years and a review of the earlier slides revealed much more appendiceal pathology than was suspected, indicating that several appendiceal conditions previously held to be rare, were much more prevalent than was realized.

The appendix can be involved in many systemic diseases ranging from tuberculosis to Weil's disease. At least ten types of mycologic parasites and eighteen types of worms invade it. Fistula formation occurs frequently and every abdominal organ has been involved, including the ureters and iliac veins. In the 50,000 cases there was a 14% incidence of melanosis of the mucosa; 1% subserosal cysts and mucosal polyps. Endometriosis involved the appendix in 0.05%. Eleven types of benign tumors were listed, including hemangiomas, leiomyomas, neuromas, etc. About twenty histologic types of cancer were described, all of them fine variations of the general carcinoma and lymphosarcoma groups. Carcinoid was found in one-half per cent of the 50,000 cases and carcinoma in 0.08%.

It is listed above that endometriosis involves the appendix 0.05%, and it needs no special clarification of its actions here as compared with any other site since the appendix is one of the areas least involved in endometriosis. It is often encountered as part of acute appendicitis and cases have been reported where it appeared in the appendiceal wound even though it was not on the appendix. There is no point in over-emphasizing endometriosis of the appendix, but sometimes it can be a surprising find, as shown by the following case:

A sixty-two-year-old schoolteacher was hospitalized because of ten days of fever, weakness and a mass in the right lower side. The day before she allegedly passed blood in her urine. Past history revealed that sixteen years before she had two operations. The first established the existence of severe pelvic endometriosis with acute pelvic inflammatory disease. Nothing directly was done. The second operation, a few days later, was a supracervical hysterectomy and bilateral salpingo-ophorectomy. The pathologist's report showed diffuse pelvic endometriosis.

At this time cystoscopy and pyelograms were found to be normal. The mass was judged to be an appendiceal abscess. After several days of systemic and intestinal antisepsis her fever subsided and the mass practically disappeared. Barium enema suggested an extrinsic mass. At operation an appendiceal abscess was found with less than an ounce of thick pus, well walled off. A shaggy, acute and chronically inflamed stump-like appendix was removed. Microscopically, the reaction was essentially chronic but the mucosa was uninvolved. There was a heavy serosal and subserosal inflammatory reaction and in one area "active endometriosis" in the muscular layer.

Elaborate theories have been formulated to explain endometriosis. The most likely are those of Sampson and Mayer. Sampson's assumes a retrograde implantation of endometrial tissue and although widely accepted has glaring weaknesses. Mayer's theory is embryohistologic and holds that the female genital tract is derived from the primitive peritoneum and that with proper hormonal stimulus the serosa can take on endometrial characteristics. The existence of appendiceal endometriosis doesn't help or hurt either hypothesis but, in this case, there seemed to be two outstanding features. The patient was post-menopausal and both ovaries were removed sixteen years before. The

continued on next page

reaction was serosal, suggesting that the infection started in the endometrium since the mucosa was hardly involved. Grossly, the appendix had the appearance of any other which was part of the walling off process of an appendiceal abscess. At operation it was not suspected that endometriosis was present.

The accessibility of the appendix and the frequency of its removal would make one think that, long before this, a clear-cut definition of appendiceal tumors would have been provided. But it is not that easy, as it will be seen that appendiceal tumors are unusual in many respects. Despite obvious faults, discussed later, the best practical classification of appendiceal tumors is: (1) the carcinoid; (2) the mucocele; (3) the adenocarcinoma; (4) the lymphosarcoma; (5) the benign tumors.

Carcinoid

The carcinoid is usually a small, firm, yellowish tumor near the tip of the appendix. It accounts for about ninety per cent of appendiceal tumors and never produces mucus. It rarely metastasizes but when it does it involves first the ileum, regional nodes and liver. Most frequently it is recovered from a patient who has developed acute appendicitis. Only one per cent of appendiceal carcinoids are malignant whereas in other locations they are commonly malignant. It seems difficult to accept the figure of ninety-nine per cent of nonmalignant appendiceal carcinoids. Perhaps they are disclosed in an *in situ* state by the development of acute appendicitis. This would mean that they really are malignant. If they were more often found at the base of the appendix and caused obstruction it would also be easier to understand why they should cause appendicitis. The point is that we need much more knowledge of the pathology of this tumor than we now possess. The recentness of the discovery of the carcinoid syndrome of cyanosis, diarrhea, asthma, valvular heart lesions, etc. after metastases from a carcinoid seems unbelievable, and perhaps even the name is a misnomer. We should still look upon carcinoids as probably malignant.

The Mucocele

The mucocele is no easier to understand than the carcinoid. In 1884, Werth used the term pseudomyxoma peritoneae to describe the findings of the so-called, "jelly belly," in a case of ruptured cystadenoma of the ovary. In this condition, mucus cysts are scattered over the peritoneum; they are lined by a columnar epithelium. Werth felt that the whole condition represented a foreign body type reaction of the peritoneum and that the columnar cells originated from the cells of the serosa. The next step was for Fraenkel, in 1901, to associate pseudomyoma with a ruptured mucocele of the appendix. About 1937, a significant paper appeared by Waugh, a pathologist from McGill University and Findley, a gynecologist from Nebraska. They put forward the idea that appendiceal mucoceles could be malignant. Finally, in 1940 Woodruff and McDonald wrote a paper on benign and malignant cystic tumors of the appendix. This paper did much to establish the malignant mucocele. These men felt that the ruptured mucocele could spread malignant cells about the peritoneum in contradistinction to Werth's idea. McDonald described appendiceal epithelium that was papillary in type and felt it was a low grade adenocarcinoma. It was believed that only the malignant mucocele of the appendix gave rise to pseudomyxoma peritoneae and that the benign type did not create this problem. Many more reports soon followed dealing with the malignant mucocele and the jelly belly. But the passing years developed a new observation, namely, that even if they looked malignant histologically, they didn't act so clinically. One is struck with the similarity of this with the carcinoids. They too are malignant tumors but when located in the appendix they don't act so clinically. Other evidence accumulated. Simple appendectomy seemed to allow patients with pseudomyxoma peritoneae to get along very well. Later it developed that the great majority of mucoceles, even with rupture and spread, did very well but again some few followed a course of rapid deterioration.

Surgery is still in the twilight zone about the mucocele, but it would perhaps be safe to say that more and more pathologists are rejecting the idea of the malignant mucocele. Certain conditions should be remembered when we are trying to understand mucoceles. Anything that causes an obstruction of the proximal end of the appendix, such as fibrosis, lipoma, fecalith, tumor, etc., should be able to produce a mucocele. The development of the mucocele and often the additional trouble of acute inflammation tend to obscure the original cause, proximal obstruction. Adenocarcinoma in a proximal obstructing position should also be able to set up a mucocele that would include real malignancy. This obstructive process and what it can do is not too bizarre if we remember that obstruction of the cystic duct causes mucocele (hydrops) of the gall bladder. The main point is that after the obstruction develops pressure within the appendix causes epithelial changes which some pathologists call malignant but which in reality are still benign. Experimentally, ligation of rabbit appendices has been done and the pressure changes studied. First glandular dilation appears followed by the epithelium being thrown into papillary folds. Eventually, there is cellular atrophy as the pressure goes unchecked. If seen during the hyperplastic stage

the appearances are similar to low grade malignancy. Furthermore, if rupture of the appendix occurs during this hyperplastic stage pseudomyxoma peritoneae follows. But what is it that allows separate growing mucus cysts all over the peritoneum? This is probably the most obscure part of the malignant mucocele problem. The epithelium lining these cysts is similar to that which lines the appendix. This makes it seem like a malignant process with metastases thruout the abdomen. Removal of the mucocele appendix will prevent the pseudomyxoma peritoneae from progressing. These cells are columnar, and they can be reproduced experimentally by continued irritation. They show no ability to invade and don't spread by the blood or lymphatic streams. They do proliferate and expand and tend to shed themselves and disappear in their own secretions.

Stating it as simply as possible, the mucocele is undoubtedly caused by proximal appendiceal obstruction from a variety of causes. A closed pressure situation is set up that allows the appendix to expand. Mucoid-like material then fills the appendix and the enlarging mass, rupture, or acute inflammation follows and sends the patient to seek medical attention. If rupture happens, and it can remain undetected for a while, a condition called pseudomyxoma peritoneae occurs. Daughter mucus producing cysts fill the abdomen. There is discussion as to whether these mucoceles can be malignant or not. Then out of every eleven mucoceles encountered are obviously benign. When the appendix is removed, even though the abdomen is covered with mucus cysts the patient for the most part follows a benign course.

Charles Carelton sums up the situation on mucoceles when he writes that pseudomyxoma peritoneae depends upon rupture at a time when the mucocele is lined by a hyperplastic mucus producing epithelium, and that a fistula between the appendix and peritoneal cavity must be established. If the fistula closes or the appendix is removed the condition is arrested because the papillary epithelial forms seen microscopically are pressure changes and not low grade malignancy. If the stage of cellular atrophy has been reached when the appendix ruptures or if the condition is encountered in an early formative stage the situation of what we call the typical benign mucocele is present.

Adenocarcinoma

Adenocarcinoma is usually called the colonic type cancer. It is by far the rarest and of course the most malignant. It occurs in about 0.5% of all surgically removed appendices and has an incidence of about 0.5% of all colonic cancers. It is found usually at the base, has a gray color and presents either as a polypoid mass, a malignant ulcer, or malignant polyp. These cancers produce mucus, but to a lesser degree than the mucocele. They often bleed, a point to remember when trying to locate intestinal bleeding. Between 1910 and 1950 there were six cases at the Mayo Clinic.

Most characteristically the appendiceal cancer is a polyp and cases of malignant appendiceal polyps have been reported with familial colonic polyposis. They spread rapidly by blood and lymph streams. It is completely similar to any colonic cancer except for the outstanding difference that the prognosis is better. No series is statically significant but the survival rate is much better than one would at first expect. One reason for this is that some cases include appendices removed during other operative procedures and lesions that were confined to the mucosa. Uihlein and McDonald had two of these out of a total series of five cases, a very important consideration favoring incidental appendectomy.

Treatment

Carcinoid takes care of itself when one has to decide about treatment. It is a diagnosis that is not made preoperatively and, worse still, its presence is not always suspected when the appendix is being removed. Perhaps, one is presumptive in saying that this is a malignant tumor, especially when one is also saying that the mucocele is not malignant. In 1% of appendix cases, it is definitely malignant, as it is malignant elsewhere in the body. When its existence is discovered preoperatively, the weight of evidence shows that simple appendectomy is adequate treatment. However, the patient should be carefully followed postoperatively, if this is at all possible.

Over the years, much work has been done at the Mayo Clinic on this whole problem of appendiceal new growths. Woodruff, McDonald, Hilsabeck, Judd, Uihlein, Dockerty and others have written excellent papers. They did pioneer work in the matter of malignant mucocele and have given excellent directions for treatment. If the mucocele involves no nearby organs, a simple appendectomy will suffice. If the tumor mass presses upon the caecum, appendectomy, which includes a portion of the caecum, should be performed. If the exact location of the tumor is in doubt, or if the caecum or ileum are involved, a right hemicolectomy is in order. If the mucocele has already ruptured, as much mucus as possible should be removed, in addition to an appendectomy. X-ray therapy is a matter of controversy, some surgeons saying that it is useful.

In the treatment of carcinoma one must assume that it is a disease of the older age groups, as are all other types of intestinal cancer. The age of the patient should always influence treatment. It is not

concluded on next page

like the carcinoid, which is found mostly in people of the twenty to thirty age group. Apparently, no case of carcinoma of the appendix has been diagnosed preoperatively. Acute appendicitis, intussusception, bleeding, etc. are the symptoms that bring the patient to the surgeon. A number of cases have been collected from the literature showing that the carcinomas were found in a preinvasive stage, or confined to the mucosa. Practically all of them are revealed by the superimposed acute appendicitis. It is this fortunate illness that makes the prognosis of appendiceal carcinoma much better than it is elsewhere in the body. If the carcinoma is confined to the mucosa, simple appendectomy is sufficient. If it is appreciated, at the time of operation, that the lesion is simply mucosal, then appendectomy is curative. If the caecum or terminal ileum is involved, right hemicolectomy should be performed.

Bibliography

1 Carcinoma of the Vermiform Appendix: Review of the literature and report of a case. W. B. Scimeca and M. B. Dockerty. Staff Meetings of the Mayo Clinic Vol. 30 No. 23

2 Uihlein, A., and McDonald, J. R.: Primary Carcinoma of the Appendix Resembling Carcinoma of the Colon S.G.O. 76:711-714 (June 1943)

3 Hilsabeck, J. R.; Judd, E. S., Jr.; Woolner, L. B.: Carcinoma of the Vermiform Appendix S. Clinics of North Amer. August 1951 995-1011

4 Woodruff, Robert, and McDonald, J. R.: Benign and Malignant Cystic Tumors of the Appendix. S.G.O. 71:750-755 (Dec.) 1940

5 Collins, D.: A Study of 50,000 Specimens of the Human Vermiform Appendix. S.G.O. Vol. 101. 1955, p. 437

6 Sieracki and Tesluk: Primary Adenocarcinoma of the Vermiform Appendix. Cancer: Vol. 9, 1956, p. 997

7 Carelton, C.: Mucoceles of the Appendix and Peritoneal Pseudomyxoma. A.M.A. Archives of Pathology. Vol. 60, 1955, p. 39

8 Waugh, T. R., and Findley, D.: American Journ. of Surg. 37:518-525, Sept. 1937

PRESENT TRENDS IN THE TREATMENT OF THE CEREBRAL VASCULAR DISEASES

concluded from page 34

Meet. Mayo Clin. 30:116, 1955; (b) Studies in cerebrovascular disease V. The use of anticoagulant drugs in the treatment of intermittent insufficiency of the internal carotid arterial system. Ibid. 30:578, 1955

4 Fisher, C. M.; Karp, H., and Sadka, M.: Paper presented at meeting of American Academy of Neurology, Los Angeles, April, 1959

5 Fisher, C. M.: Occlusion of the internal carotid artery. Arch. Neurol. and Psychiat. 65:346, 1951

6 DeBakey, M. E.; Crawford, E. S.; Cooley, D. A., and Morris, G. C., Jr.: Surgical considerations of occlusive disease of innominate, carotid, subclavian and vertebral arteries. Ann. Surg. 149:690, 1959

7 McDevitt, E.: Anticoagulant therapy in the treatment of cerebral thrombosis, Second Princeton Conference on Cerebral Vascular Diseases, Grune and Stratton, Inc. New York, 1958

8 Howell, D. A.; Stratford, J. G., and Posnikoff, J.: Prolonged hypothermia in treatment of massive cerebral hemorrhage, Canad. M.A.J. 75:388, 1956

9 Vandewater, S. L.: The use of Hypothermia and Hypotension in Subarachnoid hemorrhage; Paper presented before Houston Neurological Society, Houston, Texas, March 14, 1959

10 Poppen, J. L., and Fager, C. A.: Intracranial aneurysms, results of surgical treatment; Paper presented before Boston Society of Neurology and Psychiatry. November 21, 1957.

11 Kinsell, L. W.: Unsaturated fatty acids and atherosclerosis. Illinois Med. J. 115:184, 1959

12 Hammond, E. C., and Horn, D.: Relationship between human smoking habits and death rates; follow-up study of 187,766 men. J.A.M.A. 155:1316, 1954

Wherever you go

forget your telephone

calls. We'll take them

for you, day or night.

MEDICAL BUREAU

of the

Providence Medical Association

Editorials

A NEW BROWN UNIVERSITY MEDICAL SCHOOL

BROWN UNIVERSITY MEDICAL SCHOOL, established in 1811, came to an ignominious end in 1827, having been put to death by President Wayland. The reasons for this death sentence have always been somewhat obscure, but recently uncovered evidence seems to indicate that Doctor Wayland had hoped to reopen the school under what he considered improved academic standards. This eventuality, however, never came to pass, despite sporadic attempts to revive the school. In 1899 on a visit to Providence, William Osler made the following observations: "The existing conditions in Providence are singularly favorable for a small first-class school. Here are college laboratories of physics, chemistry and biology, and modern hospitals with three hundred beds. What is lacking? Neither zeal, persistence nor ability on the part of the physicians, but a generous donation to the University of a million dollars, with which to equip and endow laboratories of anatomy, physiology, pathology and hygiene. These alone are lacking; the money should be the least difficult thing to get in this plutocratic town. The day has come for small medical schools in university towns with good clinical facilities." Of course, the price has now gone up fifty times.

The need to train larger numbers of physicians is hard upon us. A special advisory group to the Public Health Service has advised that expansion of existing medical schools and establishment of new ones must be accelerated. They further advise that the nation's supply of physicians will continue to lag behind the needs created by an increasing population unless the federal government makes an urgent contribution toward the construction of medical school facilities.

Hon. John E. Fogarty, congressman from Rhode Island, has associated himself closely with federal plans for medical school construction. He has stated that Brown University would be a logical focus for a new medical school, which would require an initial investment of $50,000,000. He is certainly in a strategic position in Congress to bring this about.

THE PROVIDENCE JOURNAL has questioned editorially whether it "might . . . not be wiser . . . to plow the $50,000,000 Mr. Fogarty speaks of into an expansion of the Vermont school, with Rhode Island, Maine and New Hampshire undertaking to find pro-rated shares of costs, than to build a new school from scratch in Providence when the problem of operating costs remains unsolved." It should be pointed out that at present Rhode Island is making no contribution to undergraduate medical education. It contains the second largest city in New England with unexcelled academic and hospital facilities. It has always proved most practicable to build medical centers where the clinical material is available and abundant. A new medical center in a relatively underpopulated area would undoubtedly attract patients, but adequate hospital, as well as basic science facilities, would have to be provided. Operating funds will have to be found for a school in Burlington, as well as for one in Providence. In Providence there are already in existence large and modern hospital buildings each with a high patient census, and a wealth of clinical material, and more bed capacity is to be constructed in the near future. If increased medical teaching facilities are to be brought to New England, Providence is emphatically the logical site.

MORE ON QUACKERY IN THE DAILY PRESS

Our illustrious contemporary of the daily press has recently commented in its editorial columns: "The fakery and the quackery to which they (the TV viewers) have been subjected, the tedious huckstering of pills, tonics, ointments, unguents, and ladies' underwear, have done as much as the rigged quiz shows to put television in a bad light."

This is an outstanding example of the "pot calling the kettle black." The outpouring of quackery in the advertising columns of the local dailies, to which we have twice previously alluded, goes on unabated. Will there be no surcease?

HOSPITAL MANAGEMENT PRACTICES

The soaring cost of hospital operation is a cause of increasing concern both to the public and to the medical profession. It is the largest single factor in the rapidly mounting cost of medical care. The Rhode Island Medical Society has recently shown its interest in this matter by the establishment of a Liaison Committee on Hospitalization Costs.

It has long been axiomatic that a business run on the same basis as a hospital would quickly go bankrupt. In some respects a hospital is more akin to a

concluded on next page

fire station than to a profit-making business. Yet despite the Alice-in-Wonderland nature of hospital economics, great strides have been made in the modernization of their practices in bookkeeping, purchasing, personnel and other areas. There is a strong presumption, however, that many of these advances have come about through the initiative of enlightened amateurs, and not as a result of the advice and assistance of professionals.

A recent news item in TIME MAGAZINE (Management: The Company Doctors, November 23, 1959) discusses the important contributions of a well-known management consultant firm in the fields of national defense and the operation of several large and important corporations. The progress in management practice has been so great in recent years that specialists in this field have become important members of the professional community. Hospitals are now such large and complicated organisms that it is time they began to think in terms of a basic reorganization of their operations. If hospital trustees and administrators could overcome their traditional reluctance at exposing their internal management practices to outside scrutiny, it would indeed be possible to improve the efficiency of hospitals without losing sight of their goal or ever-improving patient care. A fling at professional management consultation on a major scale would seem to be well worth a trial.

AS CLEAN
AS MODERN
DAIRY SCIENCE
CAN MAKE IT...

The A. B. Munroe Dairy Laboratory, where milk is subjected to constant testing, using the most modern methods of milk analysis.

A. B. MUNROE Robert E. Armstrong DAIRY EAST PROVIDENCE, R.I.

Through every step in processing, from the immaculate receiving room to pasteurizing and homogenizing, on through bottling and refrigeration, the A. B. Munroe Dairy observes the strictest standards of dairy hygiene. The spotless surroundings and rigid quality control are so designed that all A. B. Munroe Dairy products that reach your table are as fresh, wholesome and pure as modern science can make them.

RHODE ISLAND QUALITY MILK ASSOCIATION MEMBER

A. B. MUNROE DAIRY, INC.
151 Brow Street, East Providence, Rhode Island

Call GE 8-4450
for Home Delivery

E. P. ANTHONY, INC.
Druggists

WILBUR E. JOHNSTON, Phar. D.
RAYMOND E. JOHNSTON, B.S.

178 ANGELL STREET
PROVIDENCE, R. I.
GAspee 1-2512
Pharmacy License #225

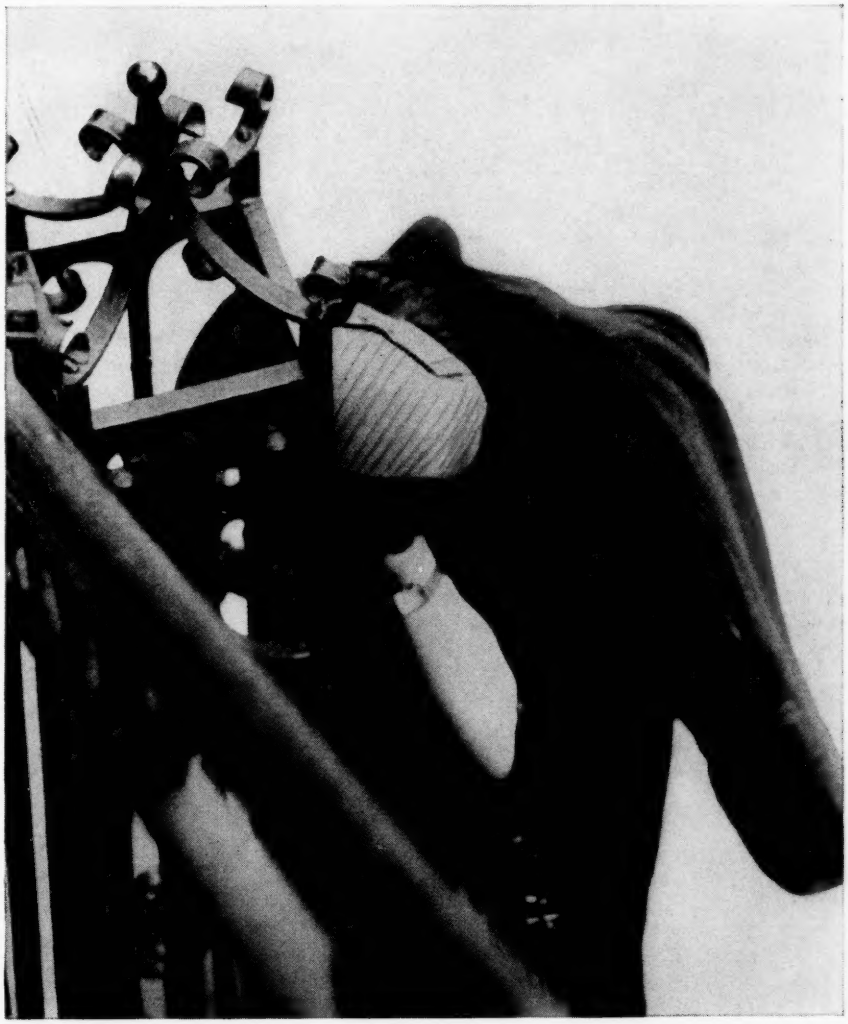
Curran & Burton, Inc.

INDUSTRIAL
AND WHOLESALE

COAL OIL

17 CUSTOM HOUSE STREET
PROVIDENCE, R. I.
DExter 1-3315

WHEN BLOOD PRESSURE MUST COME DOWN...



When hypertensive symptoms such as dizziness, headache and fainting are frequent enough and severe enough to interfere with your patient's activity and safety—then it is time to consider the beneficial actions of Serpasil-Apresoline. Both Serpasil and Apresoline lower blood pressure. When the Serpasil-Apresoline combination tablet is prescribed, blood pressure response is even better. In addition, Serpasil contributes favorable calming and heart-slowing effects. Apresoline increases renal blood flow, decreases cerebral vascular resistance and inhibits the actions of humoral pressor agents. Combined with Serpasil, Apresoline is effective at a lower dosage, thus side effects are rarely a serious problem.

SUPPLIED: *Tablets #2* (standard-strength), each containing 0.2 mg. of Serpasil and 50 mg. of Apresoline. *Tablets #1* (half-strength), each containing 0.1 mg. of Serpasil and 25 mg. of Apresoline. *Samples available on request.*

Serpasil®-Apresoline®
hydrochloride
(reserpine and hydralazine hydrochloride CIBA)

2/2040 MK

CIBA SUMMIT, NEW JERSEY

REPORT ON THE ACTIONS OF THE HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION

13th CLINICAL SESSION

December 1-4, 1959, at Dallas, Texas

CHARLES J. ASHWORTH, M.D., *Delegate*

FREEDOM OF CHOICE proved to be the outstanding item on the agenda of the House of Delegates of the American Medical Association at its recent meeting held in Dallas, Texas, December 1 to 4. It should be recalled that this problem of *Freedom of Choice* was considered at great length at the meeting in Atlantic City last June, and what was thought to have been a solution suitable to everyone was adopted. At that time, it appeared to satisfy the medical minds but its interpretation by the press following the meeting was so diverse that the intended meaning of the A.M.A.'s stand on this question was distorted by many writers throughout the country. As a result of this, four resolutions were introduced by different states for further consideration of *Freedom of Choice* which the Reference Committee on insurance and medical service combined and reported to the House as follows:

1. "The American Medical Association believes that free choice of physician is the right of every individual and one which he should be free to exercise as he chooses."

2. "Each individual should be accorded the privilege to select and change his physician at will or to select his preferred system of medical care, and the American Medical Association vigorously supports the right of the individual to choose between these alternatives."

The third statement submitted to the House for approval provided the only real controversy that developed at the concluding session of the House, with the result that an amend to the report of the Reference Committee on this particular subject, after lengthy debate, was adopted. Paragraph three under this section now reads as follows:

3. "Lest there be any misinterpretation, we state unequivocally that the American Medical Association firmly subscribes to freedom of choice of physician and free competition among physicians as being prerequisites to optimal medical care. The benefits of any system which provides medical care must be judged on the degree to which it allows of, or abridges, such freedom of choice and such competition."

The reaction of the press to date on this change of wording has not disclosed even a suggestion of any confusion regarding the A.M.A.'s stand on this question of an individual's right to select the physician of his choice and apparently has removed all doubt that developed following the June meeting as to the A.M.A.'s stand on closed panel practice.

Physician-hospital relations claim the second place of importance in the deliberations of the House of Delegates, as attested by 12 resolutions on this subject being introduced by various state delegations. Here again was the reintroduction of an issue that was thought to have been solved in 1951 when the "Guides for conduct of physician in relations with institutions" was adopted. It was, therefore, the recommendation of the Reference Committee that the House of Delegates not adopt any of the 12 resolutions submitted but reaffirm the 1951 Guides as its official policy on hospital-physician relations, and that all subsequent or inconsistent actions be considered superseded. Further recommendations included:

1. Strengthening relations with hospitals by action at state and local levels; 2. Continuation on the part of the Board of Trustees of the Association to maintain liaison with the Board of Trustees of the A.M.A.; 3. That the entire problem be reviewed by the Council on Medical Service to determine whether or not any action has developed that would be inconsistent with the 1951 guides since their adoption.

The following general principles summarized in the Guides for adjusting controversies emphasize the following three points:

"1. A physician should not dispose of his professional attainments or services to any hospital, corporation or lay body by whatever name called or however organized under terms or conditions which permit the sale of the services of that physician by such agency for a fee.

"2. Where a hospital is not selling the services of a physician, the financial arrangement if any between the hospital and the physician properly may be placed on any mutually satisfactory basis. This refers to the remuneration of a physician for teaching or research or charitable services or the like. Corporations or other lay bodies properly may provide such services and employ or otherwise engage doctors for those purposes.

"3. The practice of anesthesiology, pathology, physical medicine and radiology are an integral part of the practice of medicine in the same category as the practice of surgery, internal medicine or any other designated field of medicine."

Realizing that many state medical societies are not interested in relative value studies or are opposed to them, the House authorized the Committee on Medical Practices as it had previously done, to inform the several state organizations through regional or other meetings of the purpose, scope, and objectives of relative value studies and the problems that may be encountered in conducting such studies as well as the manner in which the results can be applied. In essence, this was reaffirmation of a previously stated policy in which the House approved, in principle, the conducting of relative value study by each state medical society rather than a nationwide study or series of regional studies by the A.M.A.

It is to be noted that your delegate recognized that the basis for disinterest or opposition to relative value studies was emphatically expressed in the fear that pursuit of this problem might result in the forced adoption of "fixed fees." While this remains such a highly controversial issue, any action must remain with each state or county medical society to accept or reject the idea of a study despite the fact that regional conferences may continue to be held for purely educational purposes.

The widespread recognition of the universal need for an increase in soundly educated and well-trained doctors of medicine received enthusiastic support. The creation of a special study committee to help meet the need for an increased number of physicians in the future was approved by the House and, specifically, asked to:

1. Present a scholarship program, its development, administration and the role of the American Medical Association in fulfilling it.

2. Ascertain the maximum to which medical schools could expand their student bodies while maintaining the quality of medical education.

3. Ascertain what universities can support new medical schools with qualified students and sufficient clinical material for teaching—either on a two year or a full four year basis.

4. Investigate the securing of competent medical faculties.

This is unquestionably an important aspect of the future of American medicine. Scholarships and other financial means to aid and defray the cost of a medical education were pointed out as urgent. The loss of many qualified as well as desirable candidates for the study of medicine to other professions and fields of endeavor is directly due to this financial factor. It is suggested that the Rhode Island Medical Society consider joining such other small states of less than 1,000 doctors, such as Arizona, Idaho, Nevada, and Utah in making a contribution to the American Educational Foundation.

At the Tuesday opening session, six state medical societies presented nearly $250,000 to the American Medical Education Foundation. The checks turned over to Dr. George F. Lull, president of AMEF, were: California, $156,562; Indiana, $35,570; New York, $19,546; Utah, $10,355; New Jersey, $10,000, and Arizona, $9,263.

Dr. Chesley M. Martin of Elgin, Okla., was named as the 1959 General Practitioner of the Year for his outstanding contributions to the health and civic affairs of his home community. Dr. Martin, who has practiced in Elgin for the past 44 years, was the 13th recipient of the annual award and the first Oklahoman to be so honored.

Dr. Louis M. Orr of Orlando, Fla., A.M.A. President, urged the nation's physicians to take a more active interest in the whole area of politics, public affairs and community life. Dr. Orr also asked physicians and medical societies to do a more effective job of telling medicine's positive story, adding that "if more people knew more about the things we support and encourage, they would listen to us much more carefully about those occasional things that we oppose."

Two nationally known political leaders from Texas also addressed the opening session. Senator Lyndon B. Johnson, majority leader in the U. S. Senate, called for a "politics of unity" which will enable Americans to exert strength and determination in an effort to create a world in which all men can be free. Speaker of the U. S. House of Representatives Sam Rayburn urged greater attention to the task of educating young people in the principles of American government and giving them a desire to perpetuate it.

Miscellaneous Actions

In considering 44 resolutions and a large volume of annual, supplementary and special reports, the House also:

Learned that the A.M.A. Board of Trustees has appointed a liaison committee to meet with a similar committee of the *American Osteopathic Association* to consider matters of common concern;

Emphasized that local medical societies should insure that no member violates ethical traditions as they relate to ownership of *pharmacies* or stock in pharmaceutical companies;

Approved the plan of the Committee on Medical Rating of Physical Impairment to publish its new guide on the *cardiovascular system* in the A.M.A. Journal;

continued on next page

LONG-TERM DISABILITY
INSURANCE WHICH ONLY
YOU CAN CANCEL
BEFORE AGE 70*
is one of the necessary components of a
CERTIFIED DISABILITY PROGRAM
for the
Physician who wants to KNOW he's secure! Programs certified by Mr. R. A. Derosier and his staff assure the client that:

1. His program "fits" his individual case
2. His policies are the best that can be obtained for the premiums paid
3. His INSURABILITY is INSURED (only HE can cancel)
4. He will have speedy and efficient assistance, from one source, when he becomes a claimant.

*provided you pay the proper premium when due, and do not retire.

for further details write or phone TODAY!
R. A. DEROSIER AGENCY
32 Custom House St., Providence 3, R. I.
GAspee 1-1391

Fuller
Memorial Sanitarium

Located on Rt. 1

South Attleboro, Massachusetts

A modern non-profit hospital for the care and treatment of nervous and emotional disorders as well as long term geriatric problems.

Physical, neurological, psychiatric and psychological examinations.

Modern recognized psychiatric therapies.

A pleasant homelike atmosphere in a beautiful and conveniently located institution.

L. A. Senseman, M.D., F.A.P.A., Medical Director
Edwin Dunlop, M.D. — Michael G. Touloumtzis, M.A.
Oliver S. Lindberg, M.D. — William H. Dunn, M.S.W.
Max Faintych, M.D. — Birtis Ingersoll, M.D.

Referred patients are seen daily (except Saturdays) 9-12 A.M., and by appointment.
R. I. Blue Cross Benefits — Tel. Southgate 1-8500

Special Rates for Long-Term Care

Recommended that Association councils and committees, whenever feasible, hold their meetings in the remodeled *Chicago headquarters;*

Called for investigation of the need, desirability and feasibility of establishing a home for *aged and retired physicians;*

Commended *Dr. F. S. Crockett,* retiring chairman of the Council on Rural Health, for his many years of devoted duty;

Urged active promotion and careful study of the newly developed "Guides for Medical Care in *Nursing Homes* and Related Facilities";

Suggested that fees for consultative examinations under programs of the *Bureau of Old Age and Survivors Insurance* should be adjudicated directly between the state medical society and the state agency involved;

Registered a strong protest to the *Veterans Administration,* urging stricter screening of non-service-connected disability patients admitted to government hospitals;

Reiterated the Association's support of the *Blue Shield* concept and directed the Council on Medical Service to submit at the June, 1960, meeting its recommendations concerning a policy statement on A.M.A. relationship with Blue Shield plans;

Suggested that S.J. Res. 41, a bill which would institute a separate program of *international medical research,* be delayed until an over-all assessment can be made of proposals now before Congress dealing with domestic and international medical research;

Endorsed the program of the Educational Council for *Foreign Medical Graduates* but also urged that judicious consideration be given to local problems involved in the July 1, 1960, deadline for certification of foreign graduates;

Urged that *medical schools* include in their curricula a course on the social, political and economic aspects of medicine;

Declared that the threat of *nuclear warfare* has imposed a tremendous responsibility on the medical profession, which must be prepared to assume a critically important role in such an event;

Suggested that the A.M.A. make available to school libraries *information and literature* showing the advantages of private medical care and the American free enterprise system;

Stated that examinations to determine the physical and mental fitness of *aircraft crew members* should be made by doctors of medicine with special knowledge and proficiency in certain techniques;

Urged the American people to get proper *tetanus toxoid,* original and booster, and other immunizations as indicated from their physicians, and called on A.M.A. members to cooperate in an educational program on tetanus immunization;

Recommended that all state and county medical

concluded on page 51

REPORT OF A.M.A. DELEGATE

concluded from page 50

societies establish programs for the inspection and testing of all *fluoroscopes and radiographic equipment;*

Approved the Speaker's proposal that the opening session of the House, at the *Interim Meeting,* be moved from Tuesday morning to Monday morning, with the reference committees meeting on Tuesday and the House reconvening on Wednesday afternoon;

Called upon each individual physician to wage "a vigorous, dynamic and uncompromising fight" against the *Forand type of legislation;*

Urged state and local medical societies and individual physicians to implement the A.M.A. program for recruitment of high-grade *medical students;*

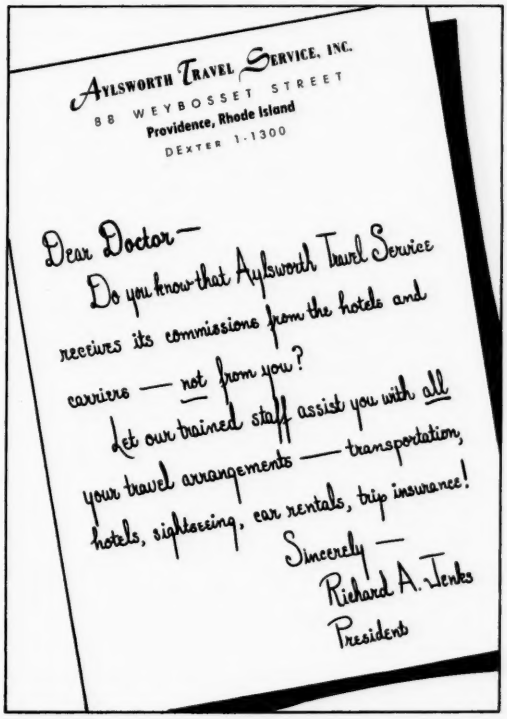
Changed the title of the Section on Surgery, General and Abdominal, to the Section on *General Surgery;*

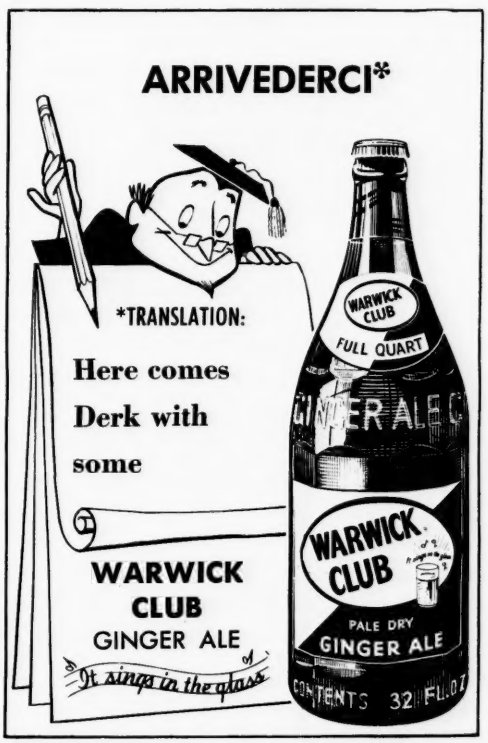
Accepted with appreciation a $2,500 contribution by Smith, Kline and French Laboratories toward establishment of a suitable award honoring the name of *Dr. Thomas G. Hull,* retiring secretary of the Council on Scientific Assembly, and

Reaffirmed the "Suggested Guides to Relations Between Medical Societies and *Voluntary Health Agencies,*" which were adopted at the December, 1957, meeting in Philadelphia.

PATRONIZE JOURNAL ADVERTISERS

J. E. BRENNAN & COMPANY
Leo C. Clark, Jr., B.S., Reg. Pharm.
Apothecaries
5 North Union Street Pawtucket, R. I.
SHELDON BUILDING
7 Registered Pharmacists
Pharmacy License #226


AYLSWORTH TRAVEL SERVICE, INC.
88 WEYBOSSET STREET
Providence, Rhode Island
DEXTER 1-1300
Dear Doctor—
Do you know that Aylsworth Travel Service receives its commissions from the hotels and carriers — not from you?
Let our trained staff assist you with all your travel arrangements — transportation, hotels, sightseeing, car rentals, trip insurance!
Sincerely —
Richard A. Jenks
President



DISTRICT MEDICAL SOCIETY MEETINGS

PAWTUCKET MEDICAL ASSOCIATION

The October meeting of the Pawtucket Medical Association was held on Thursday, October 29, 1959 at the Lindsey Tavern. The minutes of the previous meeting were read and accepted. A communication from the Rhode Island Medical Association giving the results of the Social Security Poll was read. A communication was persented by Joseph Doll, M.D., chairman of the immunization Committee, announcing the results of the polio clinics held by the Pawtucket Medical Association. A total of 1,943 inoculations were given; 443 first, 682 second, 216 third, and 602 fourth polio shots.

A discussion among the members was held concerning the Social Security Poll. At the September meeting of the Medical Association, Doctor Charles Ashworth, the Rhode Island delegate, reported that when he attended the house of delegates meeting he was unaware of the results of the poll; and, therefore, voted against Social Security for doctors. A resolution was unanimously accepted by the Association requesting the secretary to inquire of the Rhode Island Medical Association the following: 1) When the results of the poll were known; 2) Why the delegate to the A.M.A. was not informed of the results; and 3) If it is customary for a delegate to vote on a matter when he has not been instructed as to how to vote by the members of the Medical Association.

Doctor Gary Paparo presented a summary of the recommendations to be presented to the governor concerning the office of medical examiner.

Doctor Alexander Jaworski reported for the Insurance Committee on a Benevolent Fund Insurance Program. His recommendations included increasing the dues of the Medical Association by $35. Because the insurance company involved would not agree to accept all members and for other reasons involving the type of insurance offered, the recommendation of the Insurance Committee was rejected.

Doctor Harry Hecker reported for the Cancer Committee concerning publicity on the current status of smoking and cancer. In view of the fact that the American Cancer Association is to consider this problem further in November, no recommendation was made by the Cancer Committee.

Doctor Bencel Schiff commented on the publicity given recently in the local newspapers on newer medications, specifically Grisofulvin. He noted that the articles were misleading. A resolution was passed instructing the president of the Association to appoint a committee to contact the newspapers and, if possible, to publicize a critique of the Associated Press article. It was further recommended that the local newspapers, as far as is possible, clear articles dealing with medical subjects with the local Medical Association. Doctor Jaworski appointed Doctor Schiff as chairman of this committee.

JOHN J. CUNNINGHAM, M.D., *Secretary*

WOONSOCKET DISTRICT MEDICAL SOCIETY

The annual meeting of the Woonsocket District Medical Society was held on December 15, 1959 at the Woonsocket Hospital cafeteria. President Edward B. Medoff called the meeting to order at 8:45 P.M. The minutes of the preceding meeting were read and approved.

A communication from the Pawtucket Medical Society was read. A motion was made and passed that the letter be placed on file.

Doctor Saul A. Wittes reported from the House of Delegates that the most pressing issue being discussed at the present time was the medical and hospital care of the aged.

Doctor Medoff appointed a nominating committee of Doctors Francis King, Henri Gauthier, and Saul Wittes to bring in a slate of officers for the coming year. The plate submitted was as follows:

President	VICTOR H. MONTI, M.D.
Vice-President	EMILE A. KASKIW, M.D.
Secretary	ALTON P. THOMAS, M.D.
Treasurer	PAUL E. BOUCHER, M.D.
Councillor	*RICHARD H. DOWLING, M.D.
Delegates	*SAUL A. WITTES, M.D.
	*JOSEPH A. BLISS, M.D.
Censors	VICTOR H. MONTI, M.D.
	AUREY FONTAINE, M.D.
	EDWARD B. MEDOFF, M.D.

*To serve until December, 1962.

concluded on page 54

no irritating crystals[1] · uniform concentration in each drop[2]

STERILE OPHTHALMIC SOLUTION

NEO-HYDELTRASOL®

PREDNISOLONE 21-PHOSPHATE-NEOMYCIN SULFATE

2,000 TIMES MORE SOLUBLE THAN PREDNISOLONE OR HYDROCORTISONE

"The solution of prednisolone has the advantage over the suspension in that no crystalline residue is left in the patient's cul-de-sac or in his lashes . . . . The other advantage is that the patient does not have to shake the drops and is therefore sure of receiving a consistent dosage in each drop."[2]

1. Lippmann, O.: Arch. Ophth. **57**:339, March 1957.
2. Gordon, D.M.: Am. J. Ophth. **46**:740, November 1958.

supplied: 0.5% Sterile Ophthalmic Solution NEO-HYDELTRASOL (with neomycin sulfate) and 0.5% Sterile Ophthalmic Solution HYDELTRASOL®. In 5 cc. and 2.5 cc. dropper vials. Also available as 0.25% Ophthalmic Ointment NEO-HYDELTRASOL (with neomycin sulfate) and 0.25% Ophthalmic Ointment HYDELTRASOL. In 3.5 Gm. tubes.

HYDELTRASOL and NEO-HYDELTRASOL are trademarks of Merck & Co., Inc.

MSD MERCK SHARP & DOHME Division of Merck & Co., Inc., Philadelphia 1, Pa.

WOONSOCKET DISTRICT MEDICAL SOCIETY

concluded from page 52

There were no counter nominations from the floor, and the secretary was instructed to cast one vote for the nominees, and they were duly elected.

The business portion of the meeting was adjourned at 9:30 P.M. and then followed a presentation by Doctor George A. Keegan and Doctor Gerald J. Lamoureux of *Traumatic Injuries of the Lower Extremities and their Treatment.*

ALTON P. THOMAS, M.D., *Secretary*

PROVIDENCE MEDICAL ASSOCIATION

A regular meeting of the Providence Medical Association was held at the Rhode Island Medical Society Library on Monday, December 7, 1959. The meeting was called to order by the president, Doctor John C. Ham, at 8:30 P.M.

Minutes of November Meeting

The president stated that the reading of the minutes of the November meeting would be omitted.

Report of the Executive Committee

Doctor Michael DiMaio read the slate of nominees for officers and delegates recommended by the Executive Committee for consideration by the membership at the annual meeting to be held on January 4, 1960. He called attention to the fact that counter nominations must be in writing, signed by ten members of the Association, and delivered to the secretary at least ten days prior to the annual meeting.

New Applications

Doctor DiMaio reported that the Executive Committee recommended for election to active membership the following physicians: Doctors Tseh-han Chen, Augustine Colella, Anthony D. Duva, Anthony Guglielmi, Dario A. Herrera, Jay M. Orson, Kurt E. Rose, and Valentino R. Simone.

Scientific Program

Doctor Ham introduced Doctor George W. Starbuck, of New Bedford, Massachusetts, Pediatrician-in-Chief, St. Luke's Hospital, New Bedford, and chairman, District I, American Academy of Pediatrics. Doctor Starbuck included in his presentation two motion pictures.

Doctor Starbuck pointed out that there were over 250 poison control centers in the United States. These centers are divided into two main categories as follows:

1. Information centers
2. Treatment centers

One of the movies shown portrayed in a very dramatic way the functioning of a typical poison control center in a community hospital.

Doctor Joseph S. Karas, director, Poison Control Center of Rhode Island Hospital, in addition to reviewing the details of the establishment of the center at Rhode Island Hospital, also reviewed the cases treated thus far. Close to 100 cases have been treated without a single death in the few months that the center has been in operation.

Mr. George F. Kenney, Chief Health Educator of the Rhode Island State Department of Health, represented Doctor Jeremiah A. Dailey, the Director of the Department, and briefly discussed the activity of the Health Department in the development of the Poison Control Center.

Adjournment

After brief discussion by members of the Association of the Program, the meeting was adjourned at 10:15 P.M.

Collation was served.

Attendance was 67.

Respectfully submitted,

MICHAEL DIMAIO, M.D., *Secretary*

FOR LEASE

East Side: 203 Waterman, one block Wayland Sq. Two doctors' suites. Each suite has large paneled office, consultation room, exam room and joint waiting room. Air conditioned, heat furnished, Hi Fi piped throughout, wall-to-wall carpet, large parking area. Appointment call Regnier, Laurienzo & Forbes, 604 Reservoir Avenue, Cranston, ST 1-4048.

JOSEPH L. McDONALD & SON, INC.

Registered Pharmacists

Corner of Lloyd and Elmgrove Avenues

TELEPHONE PL 1-7523

Offering a

Complete Prescription Service

Pharmacy License No. 185

Lederle LEDERLE LABORATORIES, a Division of AMERICAN CYANAMID COMPANY, Pearl River, New York

NECROLOGY, 1959 — THE RHODE ISLAND MEDICAL SOCIETY

HERBERT H. ARMINGTON, M.D., a former staff member of Providence Lying-In Hospital and Rhode Island Hospital, died on August 12, 1959 after a short illness.

Doctor Armington was born in Providence on January 20, 1878, and he was graduated from Brown University in 1900, and from the College of Physicians and Surgeons in New York City in 1904. He was assistant house physician at New York Lying-In Hospital in 1904 and 1905, an intern in medical and surgical services at Rhode Island Hospital from 1905 to 1907, and house physician at Providence Lying-In Hospital in 1907, when he resigned to enter private practice.

He was school physician for the city of Providence from 1913 to 1923, and a physician to the city poor from 1923 to 1933. At Rhode Island Hospital he had been a member of the out-patient surgical staff, surgeon to the out-patient department, acting assistant house surgeon and a member of both the consulting and courtesy staffs.

He enlisted as a private in the Hospital Corps, Rhode Island National Guard, in 1913, and he was commissioned a first lieutenant in the Guard's medical corps in that year. In 1915 he was commissioned a captain and then became commander of the first Guard ambulance company. He participated in Mexican Border service in 1916, and he was then assigned to duty with the Coast Artillery Corps in 1917. During World War I, he served with the Rhode Island National Guard Coast Artillery command in 1917 and 1918, when he took charge of a school for non-commissioned officers of the Hospital Corps at Fort Strong, Massachusetts, and at Fort Andrews, Massachusetts.

Doctor Armington was a life member of a number of Masonic organizations: What Cheer Lodge; Overseas Lodge; Providence Royal Arch Chapter; Calvary Commandery; Rhode Island Consistory, A. A. Scottish Rite, and he was a former president of Narragansett Bay Chapter.

He was also a member of the Military Order of Foreign Wars; Sons of the American Revolution; Alden Kindred of America, and the American Legion, of which he was a former commander of the Providence Post. In 1934 he was grand chef de gare of Rhode Island in the Forty and Eight.

His medical affiliations included membership in the Providence Medical Association, the Rhode Island Medical Society, the American Medical Association, and the Rhode Island Medico-Legal Society.

FRANK A. CUMMINGS, M.D., died on May 6, 1959 after a long illness. Doctor Cummings was born in Providence on September 7, 1883. He attended La Salle Academy, and he was a member of the graduating class of 1907 at Brown University, and later he was graduated from Tufts Medical School in 1911. He served his internship at Boston City Hospital from 1911 to 1912.

In 1914 he became an associate at Rhode Island Hospital and from 1919 to 1942 he served on the active staff at the hospital. Since 1942 he had been on the courtesy staff.

Doctor Cummings was a member of the Providence Medical Association, the Rhode Island Medical Society, the American Medical Association, and the American College of Gastroenterology. His nonmedical affiliations included membership in the Providence Art Club and the University Club.

FRANCIS V. GARSIDE, M.D., a practicing physician in Providence for the last thirty-five years, died on April 7, 1959. Doctor Garside was born in Providence on December 27, 1896. After graduating from Classical High School and attending Brown University, he was graduated from the Harvard Medical School in 1922. He then returned to Providence where he interned at the then Providence City Hospital (Chapin) and also at Rhode Island Hospital.

Doctor Garside had the reputation of never refusing a call. He never stood on ceremony or spared himself. His office lights often burned late into the night, and his waiting room was crowded with men and women who at times waited four or five hours to get his mixture of kindly understanding and advice. A doctor friend of his said, "He always was concerned only with medicine, that was his business and that was his hobby. He never thought of himself."

Doctor Garside was on the staff of Rhode Island Hospital and Saint Joseph's Hospital. He became assistant gynecologist at Saint Joseph's Hospital and he was a member of the active surgical service at Our Lady of Fatima Hospital. He was also asso-

ciated with Roger Williams General Hospital and the Charles V. Chapin Hospital, and he was a former president of the staff of Our Lady of Fatima Hospital. For a short time in 1924 he served as assistant superintendent at Rhode Island Hospital. He was a member of the State Board of Examiners for Medicine since 1954.

Doctor Garside was a member of the Providence Medical Association, the Rhode Island Medical Society, of which he was serving as treasurer at the time of his death; the American Medical Association, and the International College of Surgeons. His nonmedical affiliations included the Sons of Irish Kings, the Friendly Sons of Saint Patrick, the Clover Club of Boston, and the Holy Name Society of Saint Sebastian's Church.

MONTAFIX W. HOUGHTON, M.D., who was for thirty-eight years a surgeon in Providence for the U. S. Public Health Service until his retirement in 1943, died on August 10, 1959.

Doctor Houghton was born in Washington and educated in that city. He was graduated from George Washington University Medical School in 1904 and he interned at the university hospital.

He was sent to Providence in 1905 and he served as examiner and surgeon for all federal employees injured in the line of duty, and he conducted physical examinations of appointees to the U. S. civil service. Doctor Houghton and an assistant did relief work in treating sick and injured seamen, and they performed quarantine and immigration duties during the years before World War I when Fabre Line ships landed passengers and freight here. During World War I, he served with the Rhode Island Naval Battalion as a lieutenant, junior grade. After 1925, he was the attending specialist to the Veterans Administration.

He was a member of the Association of Military Surgeons, the Providence Medical Association, the Rhode Island Medical Society, the American Medical Association, the George Washington Medical Society, and the Interstate Postgraduate Assembly.

ISRAEL H. KAPNICK, M.D., died on January 3, 1959, after a short illness. He was born in Providence on February 27, 1913, and he was a graduate of Classical High School, Brown University, Class of 1933, and Harvard University Medical School, Class of 1938.

Doctor Kapnick interned at Massachusetts General Hospital from 1938 to 1939 and at Beth Israel Hospital in Boston from 1939 to 1941.

He was a cancer consultant to the State Department of Health and a member of the staffs of Miriam, Chapin and Roger Williams General hospitals. He had been associated in the general practice of surgery since 1944.

In a paper Doctor Kapnick read at the annual meeting of the American Association for Cancer Research in 1957, he announced that he had devised a quick diagnostic method of early detection of some forms of cancer while they still may be amenable to treatment. He had used the test on some 500 persons. He discovered that the existence of so-called metastic cancer of the bone can be established by the presence of certain enzymes in the spinal fluid. The practical importance of the discovery, according to Doctor Kapnick, was that cancer could be detected five or six months before it would be possible to pick up the malignancy through X rays.

Doctor Kapnick was a member of the Providence Medical Association, the Rhode Island Medical Society, and the American Medical Association. He was a diplomate of the American Board of Surgery and a member of the Inter-Society of the Cytology Council. He also contributed numerous articles on cancer research to medical journals.

FRANCES A. KENYON, M.D., a practicing physician in South County for more than fifty years, died at her home in Woodville, Rhode Island on February 15, 1959. Doctor Kenyon was born in Wyoming, Rhode Island, on January 23, 1871 and, except for her out-of-state medical study work, she lived in Rhode Island all of her life. She was a graduate of Classical High School and received her degree in medicine at Hahnemann Medical College, Chicago, in 1894.

She began her practice in Rhode Island in 1905, making her calls to Ashaway, Hopkinton City, Hope Valley, Bradford, and other villages with a horse and buggy. When the first car with a self-starter made its appearance, Doctor Kenyon gave up the buggy and with her automobile extended her practice to Providence, Narragansett, and other communities.

Doctor Kenyon was the first woman in the country to hold the position of medical examiner, a responsibility she retained for thirty-two years until her death. Her appointment by Governor Aram J. Pothier in 1926 caused a furor in the Rhode Island Senate. The legislators were determined not to admit a woman to this post. A proud woman and an ardent feminist, Doctor Kenyon fought for her right to serve, and on February 22, 1927, the Senate gave its unanimous approval and a thunderous ovation to Doctor Kenyon who came in person to accept the appointment. Later she was named medical examiner for the whole of Washington County, as the original jurisdiction included only Charlestown and Richmond.

In addition, she was made Richmond town health officer and school physician. She also was school physician in Hopkinton for many years.

During World War II she set up a casualty aid

continued on next page

station at the Wood River Junction Congregational Church. A brigadier general inspecting it called it "the finest equipped medical center in the state outside the hospitals."

Her devotion to her profession through these years brought her the honor of being chosen in 1956 as "Woman of the Year" by the Westerly Quota Club, of which she was a member.

In October, 1957, Doctor Arthur O'Dea, chief medical examiner for the state, at a testimonial dinner, hailed Doctor Kenyon for having made "a contribution to Richmond, the state and to the world as well."

Doctor Kenyon was a member of the Rhode Island Medical Society, the Washington County Medical Association, the American Medical Association, the Providence Plantations Club, the American Public Health Association, the American Medical Women's Association, the Senate of Seniors in Ohio, the Hahnemannian Society of Chicago, and the Westerly Quota Club. Doctor Kenyon was also a member of St. Elizabeth's Church, Canonchet.

Doctor Kenyon served on the staffs of the Roger Williams General Hospital in Providence, and the Westerly Hospital.

THADDEUS A. KROLICKI, M.D., who served for ten years as a state medical examiner, died suddenly in his office on December 12, 1959.

Doctor Krolicki was born in Bridgeport, Connecticut, on December 19, 1905. He was educated at the Bridgeport schools and at St. Louis University where he received his medical degree in 1929. After completing his internship and residency in St. Louis hospitals, Doctor Krolicki moved to Rhode Island in 1931 to begin his practice of medicine.

Doctor Krolicki was a member of the Army reserve from 1925 until World War II.

For two years Doctor Krolicki taught experimental animal psychology at Rhode Island College of Pharmacy and Allied Sciences, and physiology at the Rhode Island College of Podiatry. He lectured at Harvard and Brown Universities.

For a time he was school physician in Pawtucket. He also served on the Pawtucket draft board at the beginning of World War II.

Doctor Krolicki was a former president of the Pawtucket Medical Association, and a founder and first president of the Caduceus Club, an organization of Pawtucket physicians.

He was a fellow of the American and International College of Surgeons and a member of the Rhode Island Medical Society, the Providence Medical Association, the American Medical Association, the Rhode Island Medical Legal Society, the National Medical Legal Society, and the Clinical and Pathological Association of Massachusetts. He also belonged to the Pawtucket Lodge of Elks and the Pawtucket Kiwanis Club.

Doctor Krolicki is survived by his wife, Mrs. Elizabeth Alice (Griffith) Krolicki; two sons, Thaddeus J. Krolicki of Pawtucket and Richard E. Krolicki of Boston; a brother, Joseph J. Krolicki of Trumbull, Connecticut; a sister, Mrs. May Wozny of Bridgeport; and one grandchild.

JOHN P. LYNCH, M.D., a practicing physician in Pawtucket for more than fifty years, died on July 4, 1959 at Memorial Hospital in Pawtucket. Doctor Lynch was born in Bristol, Rhode Island, on January 5, 1880. He attended La Salle Academy and was graduated with the degree of Doctor of Medicine from Long Island Medical College in 1905. He interned at Saint Vincent's Hospital on Staten Island.

Doctor Lynch was a member of the Pawtucket Medical Association, the Rhode Island Medical Society, and the American Medical Association. He was also a member of the Nu-Sigma-Nu Fraternity, Xi Chapter.

ANDREW W. MAHONEY, M.D., a Providence obstetrician and gynecologist for many years, died on July 29, 1959 after a long illness. Doctor Mahoney was born in Southbridge, Massachusetts, on November 30, 1892. A graduate of La Salle Academy and Georgetown University, he interned at Saint Vincent's Hospital, New York City.

Doctor Mahoney served as a medical officer with the British Army during World War I. He was subsequently head obstetrician and gynecologist at Saint Joseph's Hospital for ten years before becoming chief of staff.

He was a member of the American College of Surgeons, the International College of Surgeons, the Georgetown Club of Rhode Island, and he was also a member of the Providence Medical Association, the Rhode Island Medical Society, and the American Medical Association.

ALBERT H. MILLER, M.D., world leader in the field of anesthesiology, died on October 31, 1959, at the Rhode Island Hospital, at the age of eighty-seven.

Born in Lewiston, Maine, on April 3, 1872, Doctor Miller received an A.B. degree from Bates College in 1894. He attended Bowdoin Medical School for a year, and then transferred to the College of Physicians and Surgeons in Columbia University from which he was graduated in 1898. From 1898-99 he served an internship at Central Maine General Hospital, Lewiston, and in 1899-1900 served as resident at Rhode Island Hospital. He began the practice of Medicine in Providence in 1901.

Doctor Miller had received numerous honors for his studies, skill, and diligence in the special

field of surgical medicine. His list of writings on the history and problems of the use of anesthesia was prodigious.

The RHODE ISLAND MEDICAL JOURNAL dedicated its entire September, 1959 issue to him, terming him a "prophet with honor in his own country."

Doctor Miller retired several years ago, but he had continued to serve in an advisory capacity whenever needed as new problems of anesthesiology arose.

Immediately after his appointment to the Rhode Island Hospital staff, Doctor Miller decided to do away with the old, closed-cone method of giving ether. He devised the newer open cone, which produced such spectacular results that it is still used.

He also devised the first methods permitting safe surgery in pharyngeal operations and surgery in the upper passages of the body while still administering, with a footpump driven device, the proper amount of anesthetic.

He was the inventor of the Miller infant resuscitator, used first at Lying-In Hospital, and of an instrument to measure oxygen used by individuals under various circumstances.

Doctor Miller wrote that "it is the duty of the anesthetist to understand and to safeguard the patient's physical powers." To this end he developed close preoperative and postoperative studies of patients.

Doctor Miller was a member of the staffs of eight hospitals in Rhode Island and Massachusetts, and from 1901 to 1934 he was senior anesthetist at Rhode Island Hospital.

From 1937 to 1942, he was editor of the RHODE ISLAND MEDICAL JOURNAL.

In 1932 Doctor Miller was presented a silver cup by the International Anesthesia Research Society in recognition of his achievements, research and teaching of anesthesia, and his service as president of the six anesthesia associations. Those associations included the American Association of Anesthetists, the New England Society of Anesthetists, the Boston Society of Anesthetists, and the Eastern Society of Anesthetists.

Doctor Miller was president of the Providence Medical Association in 1925, and president of the Rhode Island Medical Society in 1934.

For many years he was a member of the Friday Night Club, a group of twelve physicians who meet once a month and hear at each meeting a paper read by the host. He also was a member of Amos Troop, a similar medical group, of which there are few remaining members.

Doctor Miller was a member of the board of directors of the Providence Athenaeum and a member of The Rhode Island Historical Society and the Providence Medical History Society.

JAMES H. PRIOR, M.D., former chief of the medical staff at Roger Williams General Hospital, died on December 23, 1959.

Doctor Prior was born on November 21, 1878 in Charlestown, Massachusetts. After graduating from Hahnemann Medical College in Philadelphia in 1902, and interning at the Metropolitan Hospital in New York, Doctor Prior established a practice in Edgewood in 1903.

In 1953 the nurses' home at Roger Williams General Hospital was named Prior Hall in honor of him, and a plaque in the home cites him for his service both to the hospital and to its school of nursing.

Doctor Prior was a member of the Rhode Island Public Health Commission for four years. He was also a former member of the state Board of Health, and the state Board of Registration. In World War I he served on Draft Board No. 8, Cranston, and in World War II he was a member of the Advisory Medical Board.

Doctor Prior was a past master of Rhodes Lodge, F.&.A.M., and past high priest of Harmony Royal Arch Chapter. He was a 32d degree Mason and a member of Palestine Temple. He was a trustee of the William H. Hall Library in Edgewood, and a member of the Church of the Transfiguration, Edgewood, and for several years was a member of the church vestry.

Doctor Prior was a registered physician in both Rhode Island and Massachusetts. His medical affiliations included the Providence Medical Association, the Rhode Island Medical Society and the American Medical Association.

MICHAEL HENRY SULLIVAN, M.D., a practicing physician for fifty-eight years, died on February 19, 1959. Doctor Sullivan was born in Newport, Rhode Island, on September 25, 1877. He was graduated from Rogers High School, spent a year at Harvard University and then entered the Harvard Medical School, where he graduated *cum laude* in 1900. Upon receiving his medical degree he interned at the Carney Hospital in South Boston, and then in August, 1901, he returned to Newport and purchased his home at 60 Touro Street where he maintained his office ever since.

As Newport's leading obstetrician for many years, Doctor Sullivan delivered an estimated 18,000 babies, including many children and grandchildren of mothers he brought into the world. He was also a general practitioner of wide repute, particularly among the members of Newport's social summer colony. Some of the colonists came to him from out of the state for consultation throughout the year. Despite several serious abdominal operations and failing eyesight in later years, he continued his house and hospital calls until his retire-

concluded on next page

ment on New Year's Day, 1959. It was only in his very last years that he gave up answering night calls, except in extreme cases involving patients of long standing.

In 1950, the city of Newport passed a resolution praising Doctor Sullivan as one of its most illustrious sons, and presented him with a copy of the Resolution engrossed and sealed with the seal of the city. In 1953, the Rhode Island Medical Society honored him as "Practitioner of the Year." The award stated that he had "Given unselfishly of himself to render service to all individuals, rich and poor alike, of all creeds and nationalities, in the County of Newport for more than fifty years." The Doctor also received a citation from the Rhode Island College of Pharmacy and Allied Sciences, which awarded him the degree of Doctor of Science, *honoris causa*. The Rhode Island General Assembly, in the January, 1953 Session congratulated Doctor Sullivan for the honor conferred upon him by the Rhode Island Medical Society in its choice of him as "Practitioner of the Year."

Doctor Sullivan was on the staff of Newport Hospital for more than forty years. He had been president of the Newport County Medical Society and the Rhode Island Medical Society. He was a member of the local exemption board during World War I and was also chief medical examiner for the local draft board in his district. He was a former vice president of the Newport Board of Health and a director of Aquidneck National Bank, The Newport Oil Corporation, and The Aquidneck Realty Company.

In addition to his county and state medical affiliations Doctor Sullivan was a member of the American Medical Association, the New England Obstetrical and Gynecological Society, the Harvard Medical Alumni Association, the Harvard Club of Rhode Island, and the Newport Reading Room Club.

GEORGE M. VIAN, M.D., a Woonsocket physician, died unexpectedly on November 9, 1959.

Doctor Vian was born in Harrisville on May 10, 1914, and he was graduated from Rhode Island State College in 1935 and from Georgetown University Medical School in 1939. He served his internship at Saint Joseph's Hospital and at the State Infirmary.

During World War II he served in the Army Medical Corps from September, 1942 to January, 1946, in the European Theater.

At the time of his death Doctor Vian was a member of the staffs of Saint Joseph's Hospital and Woonsocket Hospital.

He belonged to the Woonsocket District Medical Society, the Rhode Island Medical Society, the American Medical Association, and the Georgetown Alumni Association.

Necrology - - - 1958

(Inadvertently not included in the January, 1959 issue of the Journal)

JAMES H. McCOOEY, M.D., a leading citizen of Woonsocket whose medical-political career spanned half a century, died at his home on June 30, 1958, at the age of seventy-four.

Doctor McCooey was a graduate of the Baltimore College of Physicians and Surgeons (now the University of Maryland Medical School) which honored him in 1957 as a fifty-year alumnus. He passed the state examining board medical examinations in 1906 in both Rhode Island and Massachusetts, and he maintained offices for many years in Millville and Blackstone. In 1918 he opened his Woonsocket office where he practiced until his retirement in 1951.

He was a past president of the Woonsocket District Medical Society, and an active member of both the Rhode Island Medical Society and the American Medical Association. In addition, he served for many years as Blackstone town and school physician.

Active in politics nearly all his life, Doctor McCooey served as a selectman, as chairman of the Blackstone Valley River Authority, as administrator for the WPA and PWA, as town moderator, and as chairman of the Democratic Town Committee, a post he held from 1936 until his final illness.

His survivors include four sons, Doctor James H. McCooey, Jr., of North Smithfield, Doctor Thomas S. McCooey, John G. McCooey, and Alfred E. McCooey, all of Blackstone; two daughters, Mrs. Ralph E. Erb of Roslyn, New York, and Mrs. Matthew F. Sullivan of Blackstone.

ESTIMATED PHYSICIANS AND MEDICAL SCHOOL GRADUATES NEEDED TO MAINTAIN PRESENT PHYSICIAN-POPULATION RATIO OF 132 PER 100,000

Year	Population Estimates Bureau of the Census Series II	Physicians Needed (M.D.)	Graduates Needed (M.D.)
1960	180,126,000	237,766	7,133
1965	195,747,000	258,386	7,751
1970	213,810,000	282,229	8,467
1975	235,246,000	310,523	9,315
1980	259,981,000	343,175	10,295

Submitted by the Division of Operational Studies of the A.A.M.C., 2530 Ridge Ave., Evanston, Illinois. Source of information will be furnished on request

"THE MEETING STREET SCHOOL"
A CHILDREN'S REHABILITATION CENTER

Questions (and the Answers) Often Asked About the Agency

Q. How do children get to Meeting Street School?

A. By written medical referral only from a physician or hospital clinic.

Q. Who is eligible?

A. Any child, who in the doctor's judgment needs further diagnosis and evaluation, and has maximal or minimal evidence of cerebral dysfunction; has a neuromuscular disorder, a learning difficulty, a cleft palate, congenital anomaly or amputation, hearing loss, speech defect, is a quadriplegia, a hemiplegia, an aphasic, a cerebral palsied, a post-paralytic, a muscular dystrophic; in fact, any physically handicapped child who will benefit from a co-ordinated, child-like, therapeutic treatment plan. In simple language, any child who needs help in learning to walk, to talk, to use his hands.

Q. What services are given once a medical referral is received?

A. First, the Diagnostic and Evaluation Service:

(1) Evaluation of what child can do in gross use of arms and legs by the physical therapist.
(2) Evaluation of the use of hands and eyes together, ability to dress and undress, to self-feed, to manipulate toys and other materials, etcetera, by the occupational therapist.
(3) A social work interview for medical and social information.
(4) Psychological testing by psychologist.
(5) Speech and hearing tests by speech therapist.
(6) A pediatric-neurological examination by one of the medical directors.
(7) A meeting of the whole staff at which the above is thoroughly discussed and recommendations are made to be sent to the referring doctor.
(8) Reports written by staff, typed up, plus a covering letter mailed to referral source. (The referring physician is responsible for the patient and it is up to him to carry out recommendations as he sees fit.)

Other services after this basic one include Home Developmental Program for Infants, nursery school groups, kindergarten groups, first-grade, therapy by appointment for school age children, camping, swimming, and roller skating.

Q. Can a child receive speech therapy, physical therapy or occupational therapy, or get into a nursery—kindergarten group, or first grade without evaluation by Meeting Street School staff?

A. No.

Q. Is anything paid for the diagnostic services?

A. Yes—a fee of Twenty-five Dollars is charged but if a family is unable to pay this, the child is seen anyway. The actual cost of this service is Seventy-five Dollars.

Q. If a child attends the Infant Developmental Program, a nursery school group, or a kindergarten class, or comes in for therapy by appointment, is there a charge?

A. Yes—like a hospital clinic fee—$2.00 for individual appointment; $1.00 for each time the child attends a group.

Q. If a parent cannot afford this small fee, what happens?

A. The child gets the service anyway.

Q. What about transportation?

A. Children are brought to Meeting Street School, by their own parents; by the Meeting Street School car within the metropolitan area, if there is no family transportation available; by the Red Cross Motor Corps; by Meeting Street School volunteer drivers.

Q. Is there a charge for Meeting Street School transportation?

A. No, but it costs 8¢ a mile to maintain and depreciate the cars. If a child lives three miles away the cost, for example, is forty-eight cents a day to bring him in and return him home, plus the driver's pay. We therefore encourage parents to transport whenever possible.

Q. Does Meeting Street School train personnel for the Rehabilitation field?

A. Physical therapy students, eight of them, received clinical affiliations during the past year at Meeting Street School. Occupational therapy students, four of them likewise. Two child development students were accepted here for training.

Popularity is a Challenge

First offered in 1950, Physicians Service has grown tremendously fast because it offers real help in meeting costs of a wide range of surgical-medical procedures.

Today, Physicians Service has the greatest percentage of enrollment of any similar plan in the country.

Great growth has been a challenge. It is a challenge to the doctors sponsoring the Plan to provide adequate, timely medical-surgical-obstetrical benefits for everyone who asks for them. What is particularly significant, Physicians Service protection has been extended to 80% of those living in Rhode Island who are over 65 years of age. No other similar program has extended its coverage so broadly.

Great growth is also an answer to a problem. For in spreading risks over more than a half million persons, costs have been cut down to a point where benefits are within the reach of everyone. And they are kept within reach, too, because Physicians Service subscribers can maintain their membership if they change jobs or retire.

In almost every instance, hospitalized patients require surgical, medical or obstetrical care. Physicians Service helps pay doctors' bills, pays for hundreds of different operations, provides X-rays and covers non-surgical visits in the hospital.

As time goes on, Physicians Service will continue to bring the most effective coverage possible to the most people.

Better Health Care for More People Through

Physicians Service

RHODE ISLAND MEDICAL SOCIETY
PHYSICIANS SERVICE